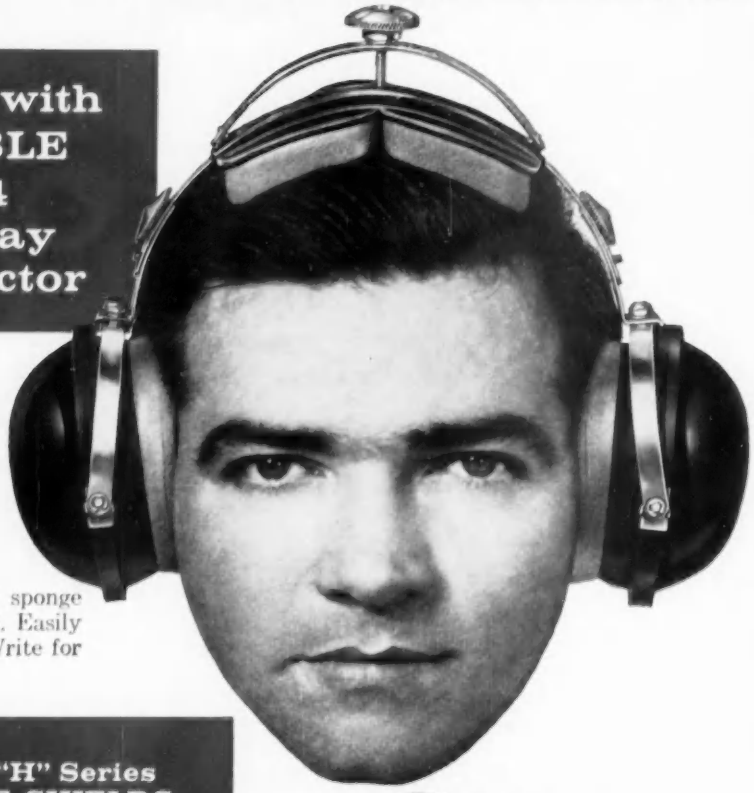
Safety Maintenance

EST. 1901 • AMERICA'S PIONEER MAGAZINE IN ITS FIELD • APRIL, 1957 • 50¢

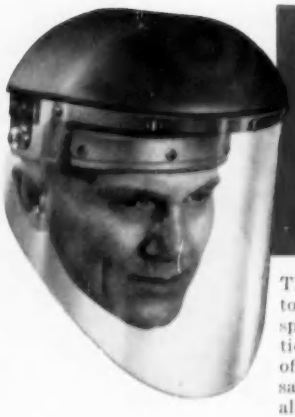
Published By Alfred M. Best Company, Inc.

Protect Workers From Industrial Noise Hazards

Muffle noise with ADJUSTABLE AO 372-14 Straightaway Sound Protector



Manual adjustment knob permits wearer to control pressure as noise varies in intensity — a comfort feature. Elongated type protector — covers jawbone opening. Excellent for both low and high frequency noise levels. Durable Neoprene rubber covered metal spring type headband. Dielectric, vinyl sponge ear cups provide complete ear seal. Easily sterilized. Many other features. Write for illustrated brochure.



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There are five types in our "H" Series line to suit every preference and all feature a spark deflector which prevents foreign particles from entering at top . . . windows offer adequate clearance over nose and safety glasses . . . a slotted snap fastener allows for heat expansion, eliminates wear at holes, also avoids cracking, warping and distortion of face shield windows. Recommended for eye and facial exposures such as metal sawing, chemical operations, buffing, sanding, light grinding, light bulb and glass bottle making, radio and TV tube exposures, bottling operations. Write for illustrated brochure.

AO 750 GOGGLE CLEANING STATION

A small compact cabinet which provides all necessary cleansing and anti-fog materials. Attach to wall at handy locations throughout the plant. 12" long, 9" high, 6" deep with tissue disposal compartments. Contains 6 oz. bottle of spray, sprayer, two boxes of tissues and 1 oz. jar of Anti-Fog. Your nearest AO Safety Products Representative can supply you. Write for illustrated brochure.

American Optical COMPANY
SAFETY PRODUCTS DIVISION

Always Insist on AO Trademarked Safety Products

SOUTHBRIDGE, MASS. • BRANCHES IN PRINCIPAL CITIES

(For details, use Key # C-1 on card on page 73)

Why Buy Magic*?

Ten Answers To That Question

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1. It is the largest and strongest on the market. It cleans and polishes instantly without tearing. A marvel of the papermakers art. Yet it costs only $8.40 per carton of 6 big refills, and the dispenser is only $2.50, or free when exchanged for any other cleaning stations.

2. MAGIC is loaded with silicone sparkle-power. Yet it does not have the glossy surface which prevents absorbing oil and oil mists from lens. This means only one MAGIC tissue is used to clean and polish. Substantial saving.

3. Another exclusive feature: It's interfolded. Thus only one sheet at a time is removed from the dispenser. Average consumption is only six refills (one carton) per year.

4. And in grimy areas like coal mines or flour mills, where washing with a fluid is unavoidable, or anti-fogging treatment required, install the HEAVY-DUTY Cleaning Station; or in plants using plastic eyewear. MAGIC Cleaning & Anti-Fogging Fluid is combined in one can, *pressure packed*. Touch the top and Presto! the can does the rest. Scientifically regulated.

5. Each can cleans about 360 pairs of glasses, whereas old-fashioned 6 oz. bottles clean only about 100 pairs. Using MAGIC FLUID costs as little as 6 cents a month per employee. You would be amazed if you figured your old-fashioned costs.

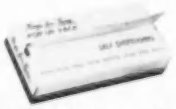
6. It's durable: Companies now using our Fluid report it prevents fogging 6 to 8 hours.

7. If competitive liquid is being used, such liquid generally sells for about $8.45 a gallon. One carton of MAGIC cans provides about the same number of cleanings as two gallons of any liquid. MAGIC FLUID costs $12.50 per carton. A saving of $4.40 over two gallons of ordinary liquid.

8. Each packet of MAGIC HEAVY-DUTY WIPERS (not silicone-treated) contains more sheets per packet than competitive paper, yet costs less. 18 big 760 sheet refills per carton at only $11.60. Dispenser only $5.95. No scratching, no lint. Compare this cost — and buy!

9. For those wishing to make their own fluid in bulk: Our adapter to the HEAVY-DUTY Dispenser, with giant 16 oz. bottle and plunger complete, is available ($2.70). This large bottle requires as little as one refill a day. Again an important saving in maintenance.

10. Any type of dispenesr may be exchanged free for MAGIC.



MAGIC Pop-Up Pack in self dispensing box for your desk or any place in the office, plant or laboratory, $11.95 per carton of twelve Boxes.

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(For details, use Key # C-2 on card on page 73)

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Complies with Federal Specifications SS-S 31f for Type III, Class C Impregnated Salt Tablets. U. S. Patent No. 2,665,236 Patented 1954 (Canada) No. 501,316.

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Safety Maintenance

formerly "SAFETY ENGINEERING"

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AMERICA'S PIONEER MAGAZINE IN ITS FIELD

SAFETY MAINTENANCE is indexed regularly by Engineering Index, Inc., New York

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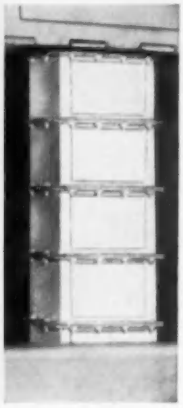
FUMES ARE POISON



Stop them quickly, effectively, at low cost with OCM® CATALYTIC EXHAUST PURIFIERS

STOP DEADLY CARBON MONOXIDE. OCM Catalytic Exhausts eliminate 95% or more of CO—90% of harmful, irritating hydrocarbons and other engine exhaust fumes and odors—from any type of equipment burning gasoline *or LP gas.*

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OCM Catalytic Exhaust Purifiers are the best way—the *only* way—to good fume elimination, even when using LP gas. Write now for complete information and name of your local representative.

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Name_____

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City_____ Zone_____ State_____

(For details, use Key # C-4 on card on page 73)

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SEND THIS PERSONAL SAFETY MESSAGE

TO EVERY ONE OF YOUR EMPLOYEES!

Safety is made attractive... vivid... colorful...

each worker clearly sees how safety benefits him.

You get enthusiastic safety cooperation instead of

tolerance... from every employee... every month.

YOUR
Safety News
PUBLISHED IN THE INTEREST OF YOUR SAFETY
THE JOHN DOE COMPANY, INC.
PROTECT YOURSELF
3
WAYS
There are three safe practice ways that do the most good in keeping free of accidents, all based on your personal desire to know safety and keep yourself safety-minded by studying the hazards of your work. They are
1 Make sure all guards are in place and working and wear the personal protective equipment your job requires.
2 Learn the safe way to do a job and do it just that way.
3 Report, avoid or eliminate all unsafe conditions.
As we see it: Safety is part of every job and like any craft it requires skill.
John Doe

Size 8½" wide x 8½" deep

...talks the worker's language!

Full of color, pictures, humor and snap, it makes safety interesting and down-to-earth. 12 times a year it covers every accident hazard. Nationwide, leading industrial firms state it's the *only safety paper their employees will read* . . . and take home to their families.

It gives you the advantages of personal contact, saving time and money. When it prevents one Lost Time accident, it has more than paid its cost for the year. Try it . . . it works!

Your Imprint Here!

makes YOUR SAFETY NEWS your own publication... a good-will ambassador ... another force for better industrial relations.

Every employee feels bucked-up by a note from the boss. If you desire, your facsimile signature can be printed here.

Your Signature Here

NOTE:

Your Safety News is designed to promote better employer-employee relations. Every item is carefully weighed from this viewpoint.

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YOU DON'T HAVE TO TWIST ITS TAIL
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Guard Well
WANTED
from the CARELESS ACTS of others the WISE MAN corrects his own
SAFETY SHOES
WORK OVERTIME
Dress for Safety
SAFETY SHOES
FALLS
FALLS KILL 80 EVERY DAY

IN YOUR EMPLOYEE'S INTEREST

Your employee's self interest in his own safety is always emphasized. Even household hazards are covered to keep him safety-conscious every minute, not only in the plant, but at home and on the way to work.

CHOCK-FULL OF ILLUSTRATIONS

Artwork is carefully chosen to lodge home each point. The cartoon style makes YOUR SAFETY NEWS as familiar and as welcome as the Sunday supplement.

THE "FOLKSY" APPROACH

Keeping the contents folksy, adding the grace note of humor, delivers your safety message with a nudge instead of a bludgeon. Your monthly chat gets enthusiasm instead of tolerance.

VIVID COLOR

Generous use of color gives sparkle, adds to the attention-riveting qualities of YOUR SAFETY NEWS. Each issue is as lively as any news-stand favorite.

HOW TO ORDER

YOUR SAFETY NEWS may be ordered with either the Standard imprint or with your Own Special Imprint. The Standard Imprint reads PLEASE COOPERATE FOR THE SAFETY AND HEALTH OF ALL . . . signed . . . A SAFE WORKER.

You can personalize YOUR SAFETY NEWS with the name of your firm and the name or facsimile signature of a company representative as illustrated. Give full instructions for your Special Imprint on the order blank below.

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Item (2) INDIVIDUAL NAME OR SIGNATURE, if desired. On a sheet of white paper, please show, in black ink, the individual name or signature, if desired, which is to appear each month on the first page of YOUR SAFETY NEWS.

NOTE: Although a personal signature is effective, some firms substitute: SAFETY DEPARTMENT, YOUR SAFETY COMMITTEE, A SAFE WORKER, etc.

Clip Out & MAIL TODAY!

ALFRED M. BEST COMPANY, Inc. • 75 Fulton Street, New York 38, N. Y.

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☐ Special Imprint ☐ Standard Imprint

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Item (2) — (If desired) - Please imprint the name or signature shown on the attached sheet of white paper, or the following:

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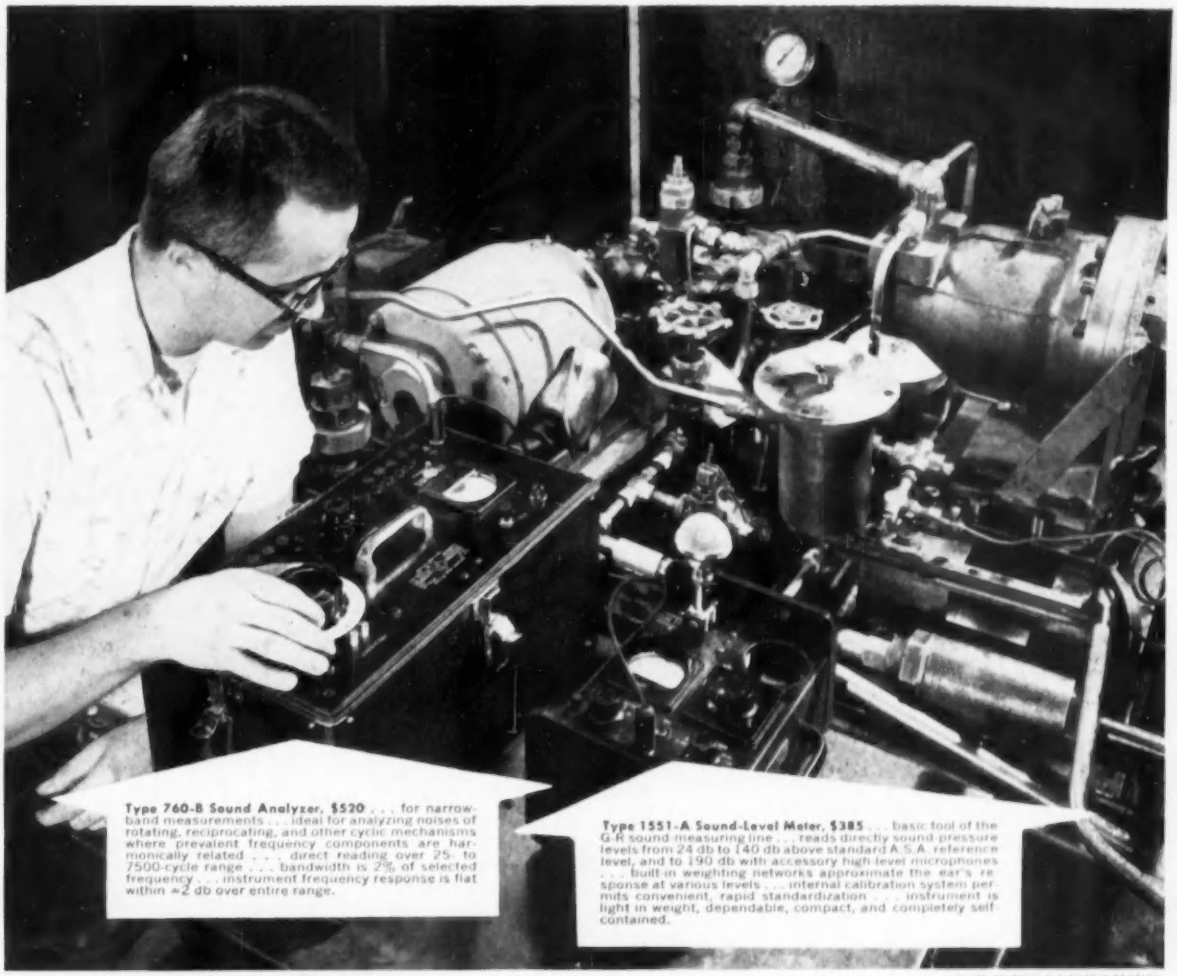
3,001 to 6,000 copies	3¢ each	2½¢ each
1,001 to 3,000 copies	3½¢ each	3¢ each
501 to 1,000 copies	4½¢ each	4¢ each
200 to 500 copies	5½¢ each	4½¢ each
100 to 199 copies	6½¢ each	5¢ each
25 to 99 copies	*	5½¢ each

* 5½¢ each plus $3.50 per month. For Special Imprint. F.O.B. New York, N. Y.



Type 760-B Sound Analyzer, $520 . . . for narrow-band measurements . . . ideal for analyzing noises of rotating, reciprocating, and other cyclic mechanisms where prevalent frequency components are harmonically related . . . direct reading over 25- to 7500-cycle range . . . bandwidth is 2% of selected frequency . . . instrument frequency response is flat within ±2 db over entire range.

Type 1551-A Sound-Level Meter, $385 . . . basic tool of the G-R sound-measuring line . . . reads directly sound-pressure levels from 24 db to 140 db above standard A.S.A. reference level, and to 190 db with accessory high-level microphones . . . built-in weighting networks approximate the ear's response at various levels . . . internal calibration system permits convenient, rapid standardization . . . instrument is light in weight, dependable, compact, and completely self-contained.

PHOTO COURTESY THE OILGEAR COMPANY

NOISE an important factor in Product Sales Appeal

Unwanted sounds emitted by modern-day products must not constitute a hearing hazard — nor must such noise interfere with the efficiency or comfort of the user. Manufacturers of home appliances find noisy products meet sales resistance. Producers of heavy industrial machinery and equipment have similarly learned that noise must be kept to tolerable levels.

The importance of noise control is becoming increasingly recognized. At The Oilgear Company, fluid-power pumps, motors, transmissions, and accessory products must meet definite performance standards where noise levels are concerned. While these specifications are set forth increasingly by customers themselves, this is to a degree unnecessary — *every* unit produced is tested, regardless, for conformance to minimum noise level standards. Management well understands that noise is one more important criterion determining the market position of their product.

At the Oilgear laboratories, the General Radio Sound Analyzer is used in conjunction with the G-R Sound-Level Meter. Here, sound-level data vs. fluid-power pump load and stroke help establish safe operating limits. Studies determine the relationship between discrete frequencies and the various pump components. Information obtained through analysis of the frequency spectrum not only aids in designing better products, but eventually serves as a useful guide in the trouble shooting of pumping equipment malfunctions.

Increasingly, sound measurements and analyses are being used by industry. Sound measurements can be an important tool in Product Design and Quality Control . . . Safeguarding Against hearing Damage . . . Maintenance . . . and Sales Promotion. Such measurements may be of help to you!

WRITE FOR THE SOUND BULLETIN..., for A Complete Description of General Radio Sound-Measuring Instruments Available For This Work.

GENERAL RADIO Company

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8055 13th St., Silver Spring, Md. **WASHINGTON, D. C.** — 1150 York Road, Abington, Pa. **PHILADELPHIA**

1000 N. Seward St. **LOS ANGELES 38** — 1182 Los Altos Ave., Los Altos, Calif. **SAN FRANCISCO**

All G-R Products are now covered by a

2-Year Warranty

(For details, use Key # C-5 on card on page 73)

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it's SAFE to say

• TAKE IT TO THE OFFICE

NO ONE would suggest that we consider equipping our office staff with safety goggles, respirators and hard hats better left to heavy industry. However, to judge by the increasing number of letters to this desk, many companies are concerned with an increasing number of office accidents.

It would be extremely difficult to gather actual statistics covering this phase of the accident problem for the reason that the average office accident is unreported since it rarely results in loss of time due to a truly disabling injury. Nevertheless, tripping over an open file cabinet or desk drawer can be serious potentially, and certainly a dangerous infection can stem from a cut finger in the office as well as in the plant.

With the nation enjoying a rate of high employment, more employees in every category are exposed to the hazards of daily living. Just as the so-called security of the home is challenged by the vast number of home accidents, so can the office become the scene of preventable casualties unless we recognize the possibility and do something about them before they occur.

In those plants large enough to have a safety director, it should be relatively simple to devote some thought to carrying the message of safety to the office and clerical staff. In other companies, some representative of management should be charged with the responsibility of trying to head off office accidents before they can result in injury.

As for that cut finger, a well-kept first aid kit should be very much at home in an office.

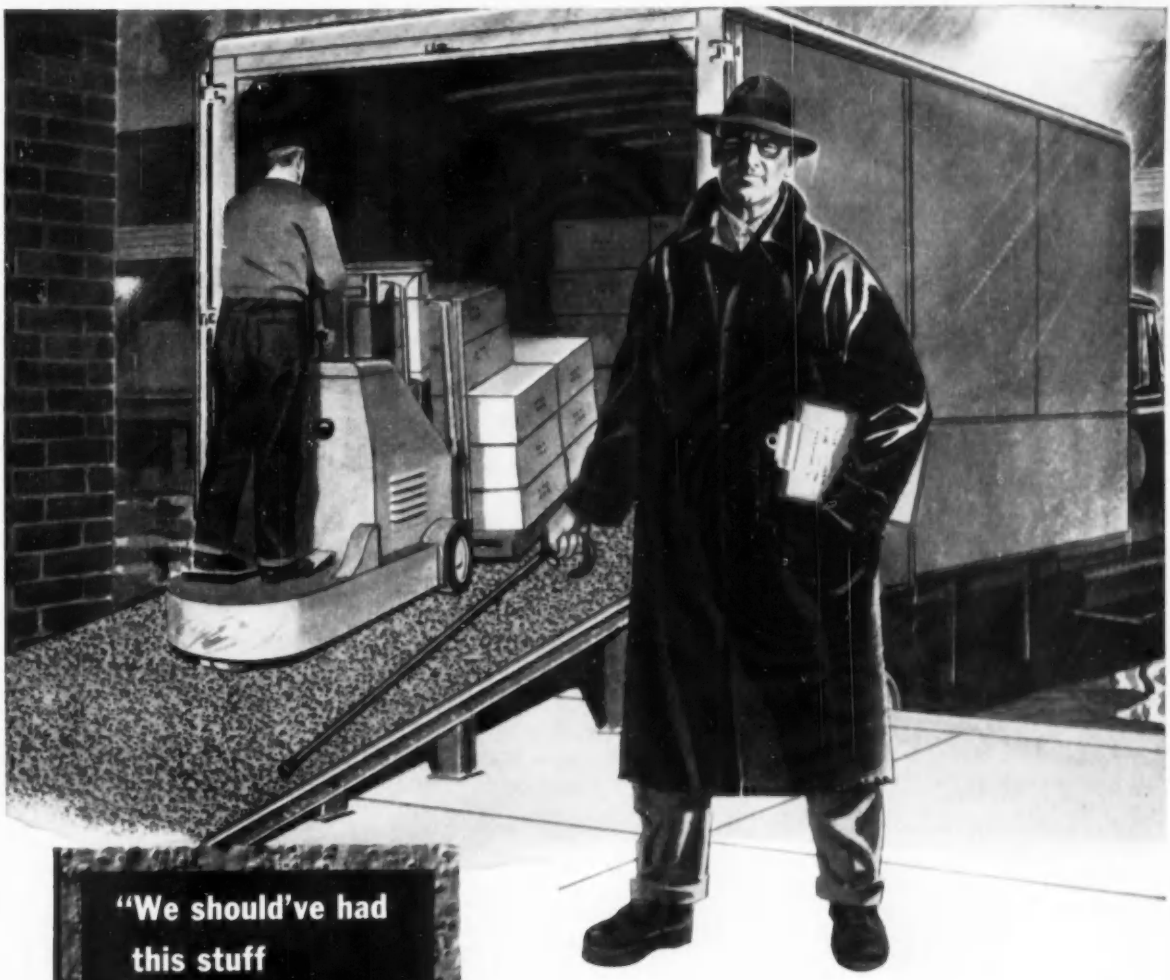
• WHAT'S "ACCIDENT-PRONE"?

FOR YEARS, there has been a great difference of opinion as to what is meant by "accident-prone." In fact there is one school of thought which believes that there is no such thing and that the accident repeater is either stupid or *careless!* Thus, when repeated instructions and even warnings fail to reduce the number of accidents suffered by any one employee, there is a tendency to discharge the victim for his own safety and for the good of the organization. This is particularly true in the heat of a safety campaign when a good record may be placed in jeopardy.

When an employee is classified as accident-prone, it is entirely possible that improper job selection is at fault and that management itself can be blamed. Perhaps the man has been assigned to work for which he was physically or temperamentally unsuited. Maybe he had some slight defect not detected by his supervisors and associates. Outside influences and burdens likewise can be a directly contributory cause of repeated accidents. Certainly, all such possibilities are worthy of exploration before resorting to outright discharge.

Pre-employment physical examinations are of little help years or even months after actual employment. When a worker suffers a number of accidents, it would seem that fairness itself would make advisable a physical and mental check-up. Often, a tactful, considerate talk with the "accident-prone" will serve as a helpful form of psychiatry in determining the actual cause of the alleged deviation. Certainly, this friendly and interested form of probing cannot help building up even greater loyalty.

Obviously, amateur psychiatry can guarantee no invariable cure. But discharge is still a rather drastic remedy and can be left to the last when all else fails. H.A.



"We should've had this stuff on the ramp years ago."

Flooring of ramp is A.W. ALGRIP—world's only abrasive rolled steel floor plate—and today's safety record tells the ALGRIP story.

ALGRIP provides super-safe footing under the *most hazardous* slipping conditions—on flat or *inclined* surfaces. It's made by a patented process in which a grinding-wheel type abrasive is rolled—*not coated*—to a controlled depth as an integral part of tough steel plate. Usage merely exposes more non-slip abrasive surface.

To eliminate accidents on ramps, loading docks and wherever slipping hazards exist in your plant, specify A.W. ALGRIP. Make a test installation. Use ALGRIP as an overlay or as independent flooring. It fabricates easily, requires no maintenance and will soon pay for itself in reduced accident and insurance rates.

ALGRIP ABRASIVE ROLLED STEEL FLOOR PLATE

ALGRIP—approved for safety by Underwriters' Laboratories

ALAN WOOD STEEL COMPANY
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A.W. SUPER-DIAMOND rolled steel floor plate—Plates—Hot and cold rolled sheet and strip—(Alloy and Special Grades)

(For details, use Key # C-6 on card on page 73)

Pittsburgh, Pa. *April 2–4*

Thirty-second Western Pennsylvania Safety Engineering Conference & Exhibit (Sheraton Hotel). Harry W. Brainerd, executive manager, Western Penn. Safety Council, Inc., 605 Park Bldg., Pittsburgh 22, Pa.

Gainesville, Fla. *April 3–5*

Fourth Annual Conference on Accident Prevention Engineering (University of Florida Campus). Donald B. Wilcox, Conference Coordinator, College of Engineering, Gainesville, Fla.

Columbus, Ohio *April 9–11*

Twenty-Seventh All Ohio Safety Congress & Exhibit (Deshler Hilton Hotel). A. W. Moon, Congress Manager, Rm. 611, Ohio Departments Bldg., Columbus 15, Ohio.

Kansas City, Mo. *April 11–12*

Central States Safety Congress (Hotel President). G. M. Burns, director, Kansas City Safety Council, 419 Dwight Bldg., Kansas City.

St. Louis, Mo. *April 22–26*

Twelfth National Industrial Health Conference (Kiel Auditorium). Industrial Health Conference Registration, Room 1300, 28 E. Jackson Blvd., Chicago 4, Ill.

Grand Rapids, Mich. *April 23–25*

Twenty-Seventh Annual Michigan Safety Conference & Exhibit (Civic Auditorium).

Syracuse, N. Y. *April 29–May 1*

Fifth Central New York Safety Conference & Exposition. Safety Division, Syracuse Chamber of Commerce, 351 South Warren St., Syracuse 2, N. Y.

Philadelphia, Pa. *April 29–May 3*

Seventh National Materials Handling Exposition (Convention Hall). Clapp & Poliak, Inc., exposition management, 341 Madison Ave., New York 17, N. Y.

Bethlehem, Pa. *May 6–8*

Thirtieth Annual Eastern Pennsylvania Safety Conference, Harold A. Seward, Secretary-Treasurer, Lehigh Valley Safety Council, 602 E. Third St., Bethlehem, Pa.

Niagara Falls, N. Y. *May 8–9*

Seventeenth Western New York Safety Conference, in co-operation with the American Society of Safety Engineers (Niagara Hotel). Patsy E. Gismondi, Executive Secretary, 1436 Delaware Ave., Buffalo 9, N. Y.

Baltimore, Md. *May 9–10*

Annual Governor's Safety-Health Conference and Exhibit (Lord Baltimore Hotel). Joseph A. Haller, executive chairman, Safety Conference, Maryland Dept. of Labor and Industry, 12 E. Mulberry St., Baltimore, Md.

Winston-Salem, N. C. *May 9–11*

Twenty-seventh Annual North Carolina Statewide Industrial Safety Conference (Robert E. Lee Hotel). H. S. Baucom, Director of Safety, North Carolina Industrial Commission, Raleigh, N. C.

Los Angeles, Calif. *May 20–24*

Sixty-First Annual Meeting of the National Fire Protection Association (Hotel Statler). Robert W. Schuette, Pub. Rel. Mgr., National Fire Protection Association, 60 Batterymarch St., Boston 10, Mass.

Duluth, Minn. *May 23–24*

Thirty-Third Annual Conference, Lake Superior Mines Safety Council. Allen D. Look, secretary, Lake Superior Mines Safety Council, 329 Federal Bldg., Duluth, Minn.

New Haven, Conn. *June 4–5*

Twelfth Annual Connecticut Safety Society Conference (Jewish Center Bldg.). Dennis J. Hickey, Manager, Waterbury Mfg. Co., Waterbury, Conn.

San Francisco, Calif. *June 11–13*

Third Western Plant Maintenance & Engineering Show (Civic Auditorium). Clapp & Poliak, Inc., 341 Madison Ave., New York 17, N. Y.

York Harbor, Me. *September 12–13*

Thirtieth Annual Maine State Safety Conference (Marshall House). Arthur F. Minchin, Secretary, Department of Labor & Industry, State House, Augusta, Me.

Chicago, Ill. *October 14–16*

Second Annual Sanitation Maintenance Show & Conference (Navy Pier). Orkin Exposition Managements, 19 W. 44th St., New York 36, N. Y.

Safety Slogans!

AND REMINDERS

UNLAWFUL TO OPERATE THIS EQUIPMENT WITHIN 6 FEET OF HIGH VOLTAGE LINES
546—N

CAUTION WET FLOORS BE CAREFUL
1016—49

STONEHOUSE SIGNS
For Accident Prevention

THINK ACCIDENTS ARE AVOIDABLE FORGET THE ALIBI
1431

DANGER KEEP FROM UNDER CONVEYOR
176—9

NOTICE PERSONAL PROPERTY LEFT ON THESE PREMISES AT OWNERS RISK. WE ARE NOT RESPONSIBLE IN CASE OF FIRE OR THEFT
1300—12

SAFETY FIRST FOR YOUR OWN SAFETY TALK SAFETY
429—G

Most people sometimes forget — and it's a dangerous oversight to forget Safety. "I forgot" is an all too common alibi for an accident.

To help workers *remember*, post Stonehouse Safety Slogans and Reminders signs. Just the few words on any of them help to promote safety.

The tendency to forget should not be overlooked—It's serious. Teach your workers to cultivate the practice of safety by reminding them to *remember* its blessings.

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"Signs Since 1863"

ACCIDENT PREVENTION • *steel* SIGNS IN STANDARD COLORS AND DESIGNS

(For details, use Key # C-7 on card on page 73)

WHAT'S SO GREAT ABOUT EYE SAVERS **SOFT VINYL FRAME** SAFETY GOGGLES?

If you checked all three, you scored 100%. If you need all three, you should check into Eye Savers SOFT VINYL FRAME safety goggles.

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Quality Eye Protective Equipment *Made by the Leaders in Plastics*

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232 West Exchange St., PROVIDENCE 3, R. I. *In Canada: Levitt-Safety Limited, Toronto 10, Montreal 26, Winnipeg*

(For details, use Key # C-8 on card on page 73)

TABLE 1: How to Inspect for Accident Prevention

(A Preliminary to the Six Steps to Safety)

A. LIST ALL EQUIPMENT: Establish schedule of inspection check-ups. For example: Automatic devices, compressors, hoisting equipment, slings, guards, storage systems.

B. HANDLING MATERIAL PROCEDURES: study the flow diagram to find out if any unnecessary movements are made. (This is still our highest frequency producer.)

C. REVIEW THE FINDINGS and check against past experience. Follow through with recommendations to management if necessary. Establish a system of color identification of various hazards.

D. STUDY ALL MATERIALS to know the character of each. Watch for changes by constant contact with Purchasing Department.

E. EVALUATE EACH HAZARD and realistically solve it. Nothing "negatives" a safety inspection program quicker than the sight of unused safeguards or personal protective equipment. Workers are always influenced by their environment; and sloppy storage, poor arrangement or bad housekeeping gives the impression that supervision or management places no value on equipment or material or safety programs. To solve each hazard problem, try following the six steps to safety outlined in the text.

SIX STEPS TO SAFETY

by **JOHN S. CRUICKSHANK**
Chief Engineer
Federal Insurance Company
New York, N. Y.

A well organized inspection system is the heart of a safety program. It starts at the top with the supervisor, whose attitude will be reflected in the workers under him.

He must live in a state of organized discontent, but he can by personal example sell his program and positively demonstrate it is not an off-again on-again proposition.

It has been said that a problem well stated is a problem half solved. Hence, he must have as his tools certain definite facts to guide his thinking so that his efforts will be used to the best advantage. He should study past accident experience, noting:

- **Location:** A high frequency in any area will indicate either poor physical condition, poor lighting, congestion or poor secondary supervision.
- **Spoilage Record:** He should keep a spoilage record. If every incident where some production is spoiled, a load spilled, some tool broken, is analyzed for cause, it will be found that the causes for such damage will be the same as those where injury is experienced. Incidentally, when the dollar values of the spoilage accidents are tallied up, it often is an excellent means of selling an inspection program to top management.
- **Scrutinize Absenteeism:** Many industrial disabilities are of an ac-

cumulative nature and are therefore difficult to identify in time and place. But they may become apparent when a worker seems to be "ailing" and is frequently absent. Colds or respiratory troubles as excuses for being off work outnumber other ailments 3 to 1. If a wide variation is found, take steps to find out why, especially among personnel exposed to certain solvents, carbon tetrachloride, metallic poisons, etc.

Now our supervisor is ready to proceed with some degree of objectivity—but a word of caution. He should not attempt to do it all himself, but should share the responsibility with his staff, remembering that "shared responsibility creates interest."

He should then proceed to gather data and acquire a general picture of conditions as they now are, as outlined in Table 1.

When you have located your hazards, there are **Six Steps to Safety** you can use in counteracting them:

Step 1. Can you substitute Men, Methods, or Materials?

We are all creatures of habit in our business procedures as well as in our personal lives. We do things certain ways by falling heir to procedures or in the uses of certain materials. We have to overcome mental inertia to resist change. Hence, substitution in one form or another may be the answer.

We may change the method by mechanization. An example is material handling. It causes most accidents and spoilage and is not actually productive. Therefore, a change in method would require first a flow diagram to appraise the material handling procedure. The diagram will show where lifting, handling and transportation acts are required and analysis will indicate where safer, better and even fewer handling methods can be substituted.

A specific example of materials substitution is the case of a manufacturer who used latex dissolved in a combustible solvent to coat small parts for radar. He was aware of the fire and toxicity hazards involved and found that he could substitute a water-soluble latex and that drying could be speeded up with infra-red lamps and fans.

Step 2. Relocate or Isolate

When substitution cannot be successfully used, the potentially accident producing condition can perhaps be relocated or isolated. Simple examples of this are the spray paint booth, metalizing processes, solvent rooms, outside switching rooms in combustible atmospheres, etc. All are well known. Where toxic dust and gases are a problem, the pickup should be at the point of origin. 90% of industrial dust is old dust raised again. Hence, good housekeeping enters partly into this picture. Ventilating systems may be considered to be a part of this step and it has been the writer's experience to note that much can be done to improve existing systems. With the necessity for heated air to replace the tremendous volume of air exhausted from a building, costs can be cut if filter units are installed to clean the air in the building and return the air to it. Mobile dust pickup units can be effectively used to localize dust concentration at specific locations to prevent spread to the rest of the area. In other words, the relocated or isolated hazard exposes as few people as possible.

Step 3. Guard the Object

When a guard is necessary it should be well designed according to reasonable industrial standards. It should be made so that accessibility will be easy and vision will be ample if needed. It should be easily removed and by all means do not weaken the frame of the machine by attaching a guard to it. The support should be arranged in some other manner. The simple grinder shield is often found swung back because it is pitted. This can be overcome by fitting a removable piece of domestic glass adjacent to the wheel to keep the safety glass in good condition. Basically, this problem may be best tackled by requesting the manufacturer of the machine to design a guard for it and make it part of the job.

Step 4. Guard the Person

Nothing hurts a safety program more than having management pay for safety equipment and seeing it unused. The failure to sell well-intentioned safety programs has been caused by management seeing expensive personal protective equipment unused for various reasons. Poor choice of equipment, and poor maintenance of it, have helped to negative management's attitude. Safety engineers should not order personal protective equipment if the problem can be solved by the preceding three steps. Consider too its relative cost, whether it will be acceptable to the workers, and if it is expensive to maintain.

Step 5. Make it Conspicuous

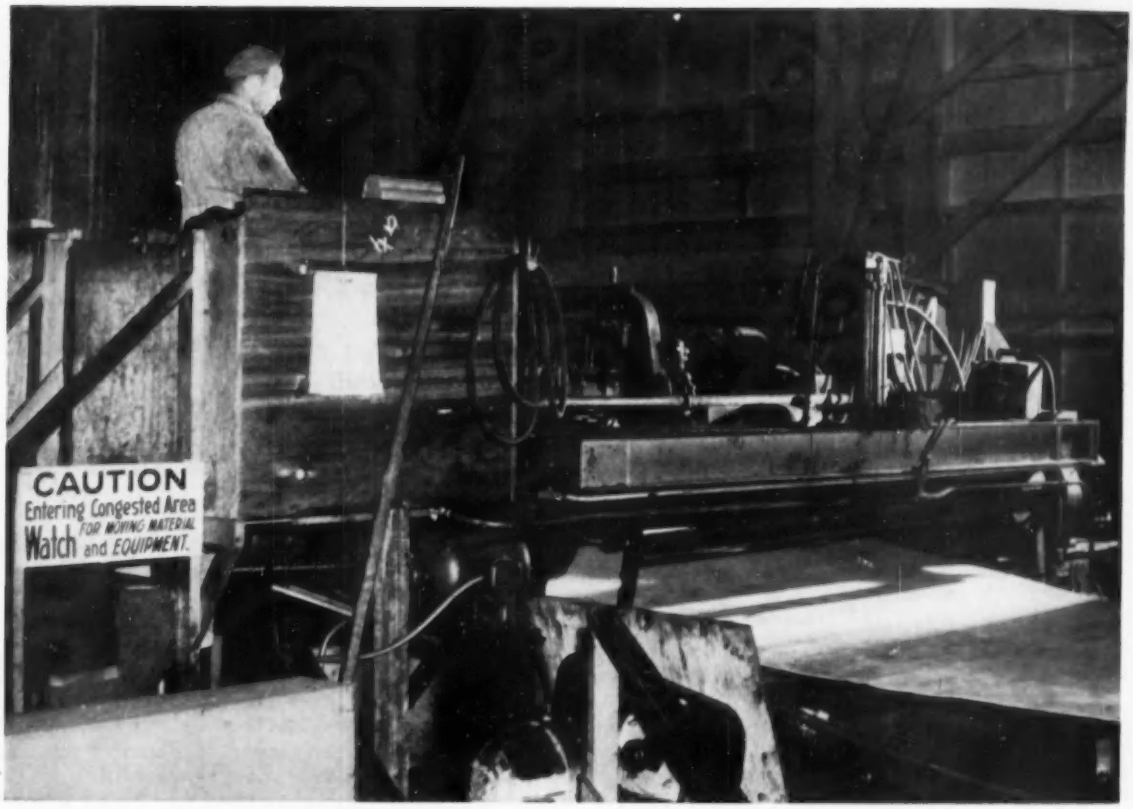
Here we make a plea for the use of the American Standards color code for industry. Much can be done to protect the stranger within the gates from hazards that are marked in a standardized manner. A lesson learned in one plant may be carried to another if we standardized on the use of color procedures. In addition to color, we may use light, sound, signs, etc. All play their part and all can be effectively used in a safety program.

Step 6. Educate and Enforce

This is self-explanatory, but a word of caution; if enforcement is needed too much, you have not sold your program. Personal example by supervision is absolutely necessary.

The foregoing steps must be thought over in very broad terms and will as a rule permit a recommendation to be practical and logical. A good inspection system is the heart of a safety program.

From an address presented at the 25th Annual Greater New York Safety Convention
Picture by courtesy of Caterpillar Tractor Co



This illustration shows the veneer side of an efficient rotary veneer lathe. Suitable safety sign reduces accident toll.

if congestion is unavoidable— advertise it!

One important principle in laying out a plant with safety in mind is provision of sufficient space around individual machines or pieces of equipment for proper operation. Also, there should be enough room for making adjustments and taking care of machine maintenance, plus sufficient room for materials in process to proceed unhampered. At least, this is correct theory, but there are many instances where the ideal cannot be accomplished; a certain amount of congestion in specific parts of a plant is inevitable.

Sometimes, by making a study of different types of equipment available, production components can be found that will require less room and still do a given job just as efficiently. This will allow one to provide adequate space for safety where it would not otherwise be possible. Certainly it is true that aisles and other approaches to any given part of a plant should be ample, and as free from obstructions as possible. Nevertheless, production changes occur from time to time, and other factors enter in to disrupt plans in such a way that congestion will exist in a greater degree than might be desirable, after everything possible has been done to avoid it.

An Efficient Reminder

Safety signs have been used for many purposes, and they can be turned to good account to keep personnel reminded of congested areas. An interesting instance in point is seen in the accompanying illustration, which shows a highly-competent rotary veneer lathe operating in a Western plant. We are here looking at the "veneer side" of the machine, as it is usually referred to; the moving sheet of wood veneer can be plainly seen in the right foreground.

The man in elevated position is the lathe operator. Beyond him, on the other side of the machine, is the area where logs are prepared and mounted between the centers or chucks in the huge lathe. Note that it is practically impossible to move into the relatively-congested area on the far side of the lathe without encountering the "caution" sign.

Picture by courtesy of Merritt-Solem Div., Solem Machine Co.

Dressed for Protection from Radioactive Materials

by **E. A. SADOWSKI**, Supervisor
Radiological Services,
Health Physics Unit
Knolls Atomic Power Laboratory
General Electric Co.
Schenectady, N. Y.

Personnel working in radioisotope laboratories wear protective clothing to reduce the possibility of surface contamination of their bodies and personal clothing. Such surface contamination can result in a radiation hazard, because the radioactive material may be deposited internally through ingestion or incision, or it may provide prolonged exposure to external radiation which continues until the contaminant is removed. Selection of the clothing to be worn requires consideration of the four factors described on the opposite page. All four of these factors must be considered carefully since proper selection of clothing not only insures adequate protection but also minimum inconvenience and expense.

Laboratory coats and shoe covers are the protection for personnel who enter a low level contamination area primarily to visit and not to perform work. Personnel with this limited protection, however, should refrain from handling laboratory equipment which may be contaminated and observing work with radioactive materials which might result in splashing, spilling, etc. from too close a distance.

The same clothing may be worn by workers handling very small quantities of relatively harmless radioactive materials and in some instances the shoe covering may be eliminated. Incidentally, you may note in some of the accompanying pictures that the laboratory coats and clothing look unpressed. Considerable cost reduction is effected by elimination of pressing and is found to be acceptable in areas not open to the general public.

Low Contamination Areas

Figure 1 shows the protective clothing generally worn by laboratory personnel handling larger amounts of radioactive materials. The laboratory provided pants, "T" shirts, shoes, socks and laboratory coats are worn to prevent the loss of personal clothing should personnel come in contact with contaminated equipment or become involved in laboratory accidents such as spillage of radioactive solutions.

Special mention should be made of hand protection. Rubber gloves are worn to protect against contamination of the hands which are the most likely parts of the body to come in contact with contaminated surfaces. Cloth gloves are worn under the rubber gloves as a measure of safety in the event the rubber gloves are punctured, cut, or torn in the course of the work, and to control to some extent the amount of perspiration resulting from wearing rubber gloves.

All protective clothing is removed in "hot" change rooms and replaced with personal clothing in "cold" change rooms.

Figure 2 illustrates the clothing which is worn in areas where small or moderate quantities of dry surface contamination are present and where the probability of contamination is high. As far as body and leg protection is concerned, the differences between this clothing and that shown in Figure 1 are the substitution of coveralls for the laboratory coat and the addition of shoe covers. Although not clearly shown in Figure 2, the shoe covers here are rubbers. The shoe covers, which may also be of the plastic boot type, are worn in areas where contamination is almost certain to exist and are removed at "step-off points," which are designated locations between areas of varying contamination control measures. Protective shoes are worn in areas normally contamination free but where there is some possibility of contamination.

The coveralls and shoes are taped together at the ankles to prevent direct exposure of the skin or under layer of protective clothing to contaminated surfaces. It is important that the coveralls fit properly since a tight fit would prevent free movement and fail to provide adequate covering if the tape should pull apart. On the other hand, an excessively loose fit would tend to snag on projecting equipment and could result in bodily injury.

Since work in such areas generally requires the wearing of respiratory protection, the field of vision is somewhat limited. This increases the possibility of a person's head coming in contact with contami-

Figure 1. For low contamination.

Figure 2. For high contamination.

Figure 3. For maximum contamination.

HOW MUCH PROTECTION IS REQUIRED?

Clothing requirements depend on the following four factors:

1. **The type, quantity and physical state of the radioactive material to be encountered.** Since radioactive isotopes vary in respect to relative health hazards, clothing requirements are dependent upon the contaminating material. Requirements for handling fragments of solid materials which may flake off at the source are generally less severe than those applied when handling finely divided powders. Work involving radioactive liquids, often necessitate the use of maximum protection. Even microscopic droplets may be of considerable concern.

2. **The work to be performed, the techniques to be employed and the facilities available.** The degree of the hazard which may be associated with particular operation must be determined. When handling is done remotely and adequate physical confinement of the resultant contamination is provided, laboratory coats are generally the maximum clothing required. On the other hand, work involving small amounts of material may require considerable protection if special facilities are not provided.

3. **The condition of the work area with respect to surface contamination.** The probability of a person becoming contaminated is obviously dependent upon the degree to which contamination already exists in the area.

4. **Hazardous conditions, not expected but which may be encountered during the course of the work.** This factor is the most difficult to determine. Consideration must be given not only to what could happen, but to the probability of its happening. Items such as line leaks, pressurization of vessels and unexpected chemical reactions are difficult to anticipate but must be considered.

nated equipment. To prevent contamination of the hair and head, caps, generally of the surgeon's type, are worn.

To prevent the spread of contamination, a definite pattern should be established for removing protective clothing. The procedures are outlined in the picture sequence shown below.

Clothing requirements for work in areas where maximum contamination is present or where high level solutions of radioactive materials will be or may be encountered are shown in Figure 3. In addition to the clothing shown in the preceding picture, plastic acid-resistant suits equipped with a hood, boots, and a second pair of rubber gloves are worn. Experience has shown that the time during which a person can wear plastic complete outfits is limited and that they reduce work efficiency. Plastic suits therefore are recommended only for extreme conditions.

The correct safety procedure for removing plastic protective clothing after work is shown in the sequence of pictures on page 19.

The use of protective clothing, as shown here, in substantial volumes involves handling, laundering and monitoring operations. All of these associated costs are higher than comparable operations not involving radioactivity; and these costs are in addition to the purchase cost of the clothing which requires frequent replacement because of excessive contamination and wear.

In the future the protective clothing presently being used might be replaced by disposable garments which would eliminate laundering and monitoring problems. Repeated handling of contaminated clothing would also be eliminated, reducing the possibility of contamination spread. The cost of using expendible garments should of course include the cost of increased volume of radioactive waste handling.

Disposable garments therefore would have to have a low cost relative to clothing presently used, and be light in weight, but with comparable resistance to puncture and tear, comparable water repellency and fire resistance.

Pictures by courtesy of General Electric Co.

Figure 4.

Safety Procedures for Removing Protective Clothing Worn in an Area of High Contamination

In this series of steps, it is assumed that entry has been made into an area where small amounts of dry contamination exist.

1. Before leaving the contaminated area, the outer protective shoe covers are removed at the inner "step-off" area and placed in a special container provided for them. (Figure 4.)

2. The wearer stops at the outer "step-off" area and is quickly surveyed for radioactive contamination with a portable GM meter. (Figure 5.)

3. The rubber gloves (Figure 6.) are removed by grasping them inside at the wrist and pulling them inside out and off the hand. This method prevents transfer of contamination to the hand that is removing the glove and also confines the contamination of the glove being removed.

4. When both gloves have been removed and placed in the proper container, the hat and coveralls are then taken off.

5. If the preceding survey revealed no contamination, or if the contamination detected was below established limits, the clothing is placed in conveniently located containers for transportation to the laundry (Figure 7.). Clothing exceeding the prescribed limits receives special handling.

6. The cloth gloves are surveyed to determine if they can be reused.

7. The final step requires the individual to be surveyed for contamination by a qualified technician.

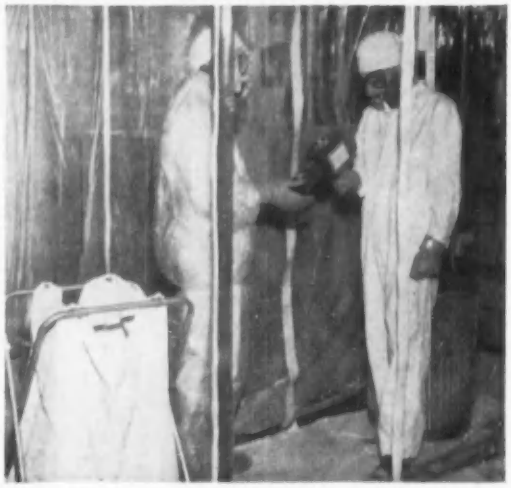
Figure 5.

Figure 6.

Figure 7.

Safety Procedures for Removing Contaminated Plastic Clothing

The following illustrate the procedure for removing clothing worn where extensive body contamination is highly probable. Before leaving the work area, the wearer removes the primary shoe covers, then stops at initial "step-off" area



where he is surveyed. The first pair of rubber gloves are removed. The acid suit is taken off by grasping it at the throat,

tearing it down the front and removing it with the sleeves inside out. The trouser section is pulled down inside out. The

plastic boots are then removed and all plastic equipment discarded as contaminated waste. The individual then goes to the next "step-off" area where he is surveyed. Other gloves and clothing are removed, as outlined on the opposite page.

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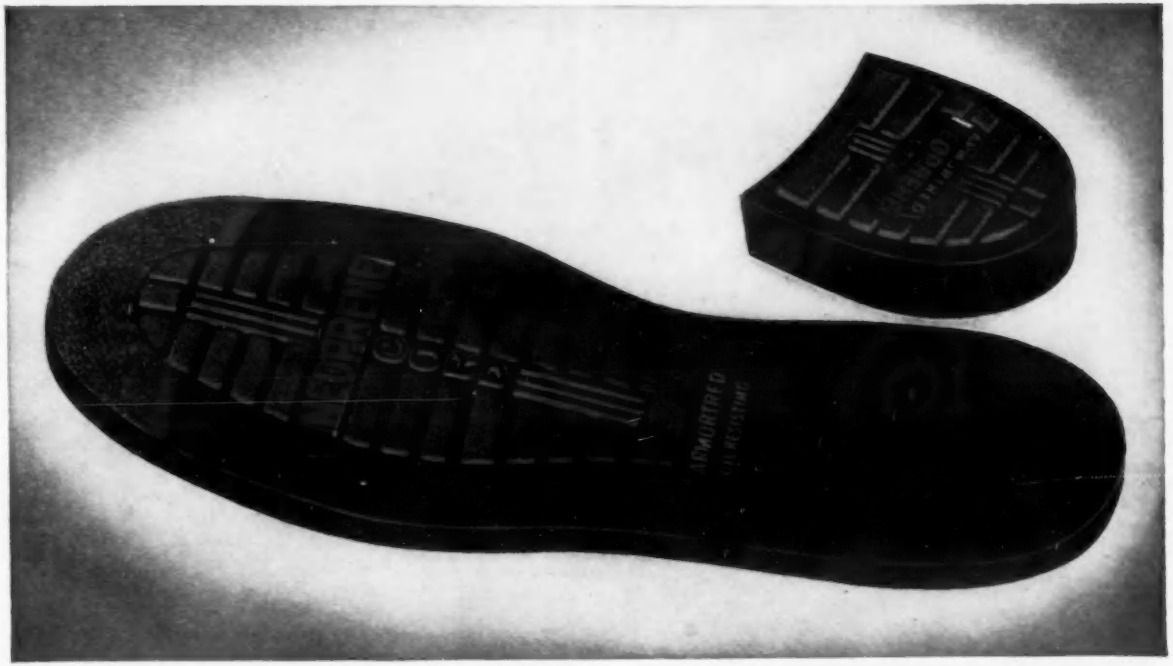


ANOTHER FINE PRODUCT BY QUABAUG—CRAFTSMEN IN SAFETY, WORK and DRESS SHOE SOLES

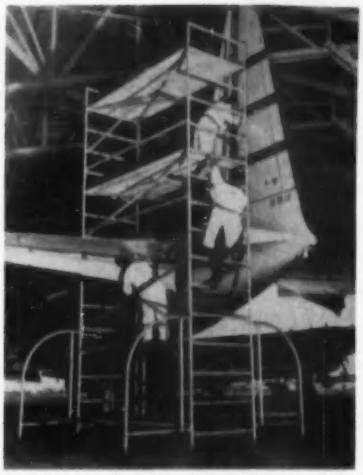
There is no short cut to quality

MANUFACTURED AND DISTRIBUTED BY **QUABAUG RUBBER COMPANY** NORTH BROOKFIELD, MASSACHUSETTS

(For details, use Key # C-9 on card on page 73)

SAFETY TIPS FOR SCAFFOLDS

Rolling scaffold should not be moved with men still on platform.



Outriggers stabilize this rolling scaffold, give greater security.

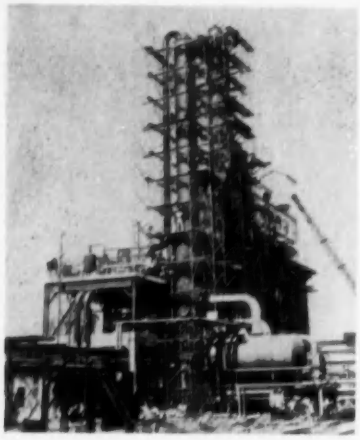
Swinging scaffold should have pawl, ratchet, wire rope inspected often.

Scaffolding manufacturers have designed numerous types of steel and aluminum scaffolds for almost every conceivable working condition. They are inherently safe. Yet we read that 17 percent of all accidents to workers result from falls, and that falls caused 19,800 deaths in 1955. Certainly, only a small percentage of these falls result from scaffolding accidents in industry but it is a percentage that can be eliminated by carefully following safety recommendations of manufacturers. The Patent Scaffolding Company has compiled a list of Safety Rules and Practices for better maintenance

Steel and Aluminum Sectional Rolling Scaffolds:

1. Lock all caster brakes when tower is in working position.
2. Height of working platform should not exceed four times smallest base dimension.
3. Do not extend adjusting screws fully.
4. Provide sufficient horizontal bracing.
5. Never allow workmen to pull themselves along while on top of rolling scaffold.

Sectional Scaffolds:



1. **Keep scaffolds plumb and level at all times. Use adjusting screws rather than blocking.**
2. **On exterior work, tie in to the wall every 25 feet of height and every 28 feet of length.**
3. **Use guard railing at all heights.**
4. **Never climb on cross braces.**
5. **Set base plates on sills to spread the load on soft ground.**
6. **Check all wing nuts and locks.**
7. **Use horizontal cross braces in addition to diagonal braces.**
8. **Make sure planking meets load requirements.**
9. **Never use even slightly damaged material.**

and use of industrial scaffolding equipment.

Industry must recognize the importance of safety practices in the maintenance and use of scaffolding equipment. A few extra minutes taken for proper maintenance and erection results in a chain reaction of benefits to the users:

(1) Workmen who feel safe and secure do a better job faster.

(2) More productive workers cut job costs and speed completions.

(3) Faster completions give you a better competitive position.

(4) Fewer accidents reduce overhead expenses, such as: lost wages, medical expenses, and insurance.

Accompanying are lists of safety practices for three types of scaffolds used most frequently for maintenance and repair. Proper adherence to these practices and the recommendations of State Safety Codes will reduce accidents and benefit the entire industrial field.

Pictures by courtesy of The Patent Scaffolding Co., Inc.

Light-Duty Swinging Scaffolds:

1. **Keep all bearing points well lubricated.**
2. **Inspect ratchet and locking pawl springs to see that they are in good working condition.**
3. **Keep weight of men and materials evenly distributed. Never overload.**
4. **Reinforce outriggers if the overhang exceeds distance specified.**
5. **Properly install toe boards and guard rails.**
6. **Keep pawls engaged at all times, except when unreeling wire ropes or lowering scaffold.**
7. **Do not alter, remove or substitute parts.**
8. **Overlap planks at least one foot on each side of putlog.**

For a copy of booklet described on opposite page, use Key # C-10 on card on page 73.

Pittsburgh COLOR DYNAMICS®

improves working conditions in plant that makes 1½ million screws daily

Properly engineered color plan in the E. W. Ferry Screw Products factory increases productive skill and reduces danger of time-loss accidents

NEXT TIME you select color for work areas in your plant, discard old-fashioned haphazard methods and do it the up-to-date way—with Pittsburgh COLOR DYNAMICS.

By selecting colors according to this modern system of painting you can improve productive efficiency of your workers, enhance morale and reduce danger of accidents.

An example of such results is found in the Cleveland, Ohio plant of E. W. Ferry Screw Products, Inc. This company produces more than a million and a half fasteners of many types daily for the automotive, airplane and household appliance industries. Besides making conventional screws, it pioneered the development and use of stainless steel screws in volume.

Several years ago the Ferry plant was painted according to COLOR DYNAMICS. The benefits from this are summarized by Robert E. Ferry, vice-president of manufacturing:

"It had been our custom to paint plant and equipment largely for the purpose of protecting them against wear and deterioration. Then we decided to color-engineer our facilities the COLOR DYNAMICS way.

"Focal colors on working parts of machines, in contrast to eye-rest color on stationary parts, help our workers see their jobs better. We have further reduced eye strain by using restful colors on walls and colors with high reflectance on ceilings. This has reduced physical fatigue and improved concentration. Safety colors which denote hazard areas have lessened danger of accidents. All this has contributed to better workmanship. Relations between management and workers has been improved. It is highly satisfying that we have been able to get all these advantages at no greater cost than normal maintenance painting."

You can test the practical value of COLOR DYNAMICS in your plant. Try it on a machine or two, or in a complete department—and see the difference it makes.

HOW YOU CAN GET A FREE COLOR PLAN OF YOUR PLANT

We'll be glad to mail you a free copy of our fully-illustrated book which explains the principles of COLOR DYNAMICS and how to use them in industry. It contains numerous practical suggestions. Better still, we'll be glad to prepare a color plan suited to your type of plant, containing detailed specifications, without cost or obligation. Call your nearest Pittsburgh Plate Glass Company branch and arrange to have a representative see you. Mail coupon at right.

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Pittsburgh Plate Glass Co., Paint Div.,
Department SM-47, Pittsburgh 22, Pa.

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☐ Please have your representative call for a Color Dynamics Survey without obligation on our part.

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DONALD C. POWER

Portrait By Fabian Bachrach

General Telephone shows gain of 140% in Payroll Savings Plan

"The qualities of thrift and good management are just as important to the individual worker as they are to the man who operates a business. Setting aside a little of what you earn today for emergencies or future plans is sound policy for everyone.

"That's why I am so enthusiastic about the way our General Telephone System employees have been purchasing U.S. Savings Bonds by the Payroll Savings Plan. In a recent person-to-person canvass which put Payroll Savings Application Blanks in the hands of our employees, enrollment in our Payroll Savings Plan increased from 5,838 to 14,156—a gain of 140%.

"It is fortunate that the world's safest investment benefits both the buyer and the United States Government that serves and protects him."

DONALD C. POWER, ***President***
General Telephone System

Encouraging *your* employees to join *your* Payroll Savings Plan is good business for *you*, *them* and *your* country. Your State Director will gladly help you install a Payroll Savings Plan or revitalize a present one. Phone or write the Savings Bonds Division, U.S. Treasury Department, Washington 25, D. C.

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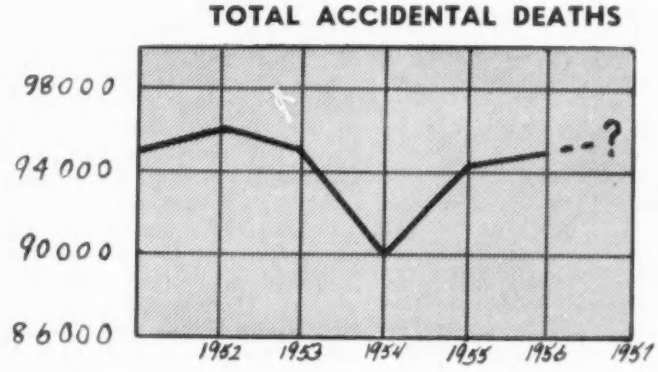
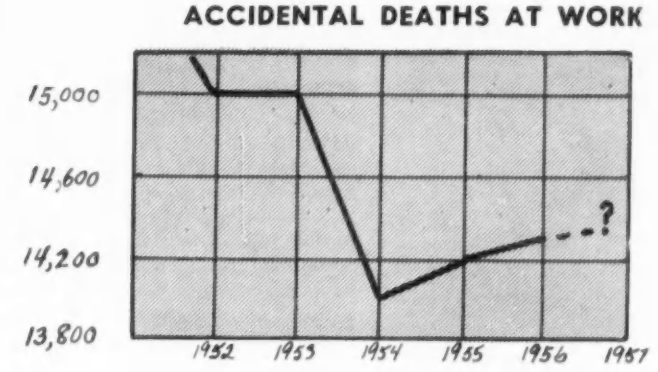
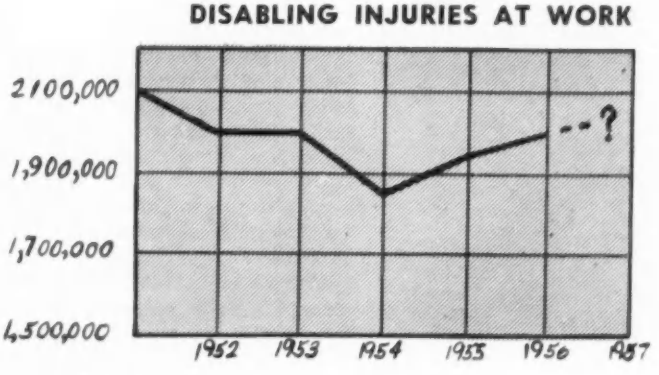
SAFETY MAINTENANCE

Are Accidents Making a Come-Back?







Killed!–95,000
Injured!–9,450,000
The Cost!–$10,800,000,000

That was the toll exacted from America by accidents in 1956. The death toll compares with a total of 93,443 in 1955—an increase of 2 percent, according to the National Safety Council.

Motor vehicle accidents remained the nation's No. 1 accident killer. A 4 percent increase in traffic deaths was the reason for the higher all-accident death total for 1956.

Home accidents claimed the second number of lives, although the 1956 total dropped by 500 to 27,500.

The estimated economic loss of $10,800,000,000 from accidents in 1956 covers both fatal and nonfatal accidents and includes wage losses, medical expense and overhead costs of insurance for all accidents, production delays, damage to equipment in work accidents and property damage from traffic accidents and fires.

The nation's 1956 motor vehicle death toll was estimated by the Council at 40,000—up 4 percent from the total of 38,426 in 1955 and virtually a dead heat with the all-time high of 39,969 established in 1941.

The Council emphasized that the 40,000 estimate cannot be called a new record. Later figures on delayed deaths will revise the estimate, and the total may be

(Continued on page 35)

Ability to maneuver in extremely tight places is big electrical truck advance.

points to consider

by **JOHN H. LEWIS**
Vice-President
Lewis-Shepard Products, Inc.
Watertown, Mass.

What was your reaction the last time your were hit with a blast of engine exhaust from a bus or automobile? Probably you gasped for a breath of fresh air. Engine exhaust has the exact same effect on everyone. And when engine exhaust continues hour after hour in enclosed areas, conditions can become impossible. Even costly ventilating equipment cannot completely clear the air.

This has become a major problem in many industrial plants and warehouses today. The fork truck, workhorse of industry and commerce, sometimes powered by a gasoline engine. As a result, plant personnel who work in the area where the truck is operating are subjected to eight hours a day of polluted air.

This is certainly no minor problem. Many physicians and researchers have studied air pollution resulting from engine exhaust and have concluded that there is a good possibility that it may be a factor in the alarming recent increase in certain diseases of the lungs.

While this relationship has not yet been proved, there is, however, no question that engine exhaust in enclosed areas can contribute to throat and lung irritation as well as nausea, headaches and asphyxia. As such it had a direct effect upon the productivity of workers in affected areas.

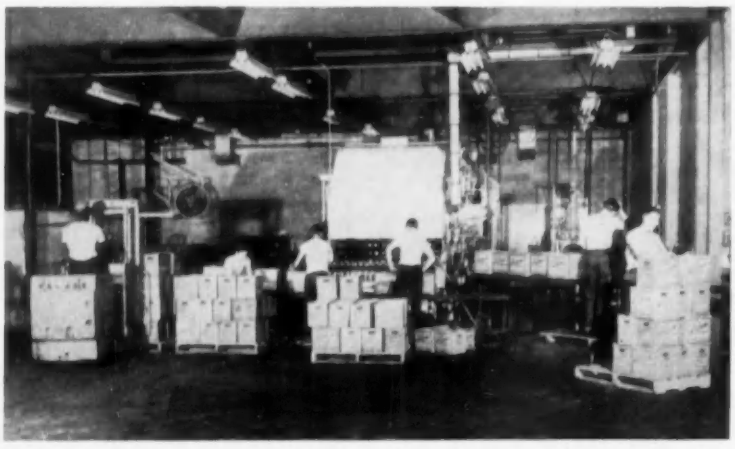
Engine exhaust, by its nature, contains poisonous carbon monoxide fumes. When gas-operated fork trucks are used in poorly ventilated areas, there is a definite harmful effect upon nearby workers. They may become sick or drowsy depending upon how much of the gas they have breathed. Either way, production will suffer and employees will become dissatisfied with working conditions.

In most plants there are certain areas where groups of trucks are permitted to idle for long periods of time. These areas are particularly dangerous, and still another contributor to the overall problem.

These facts are not meant to create alarm. They are simple truths. The engine exhaust problem has reached the point where at least one large city has passed laws to limit the emission of exhaust by fuel-burning vehicles. Certainly if there are laws to prevent this type of pollution from being emitted into the open air of our cities, then industry ought to be taking firm steps to control it in enclosed areas where the threat is much more serious.

One reason why gasoline powered fork trucks saturate plants with toxic carbon monoxide is a lack of preventive maintenance on the trucks. To reduce the nuisance, an extensive preventive maintenance program must be instituted by the user. This program should include a frequent check of the truck's carburetor, where an overly rich mixture can produce substantial amounts of carbon monoxide.

Still, even this plan has its drawbacks. While every fork truck manufacturer advocates a definite preventive maintenance program, it can be overdone. A fork truck



Odorless, smokeless operation of fork trucks is vital in food processing plant.

in selecting fork trucks

that is almost continuously in the service shop for adjustments and overhauls obviously is defeating the purpose of its very existence. Not only is the truck slowing down the production or warehousing-shipping processes, but it is actually hiking the costs of the entire materials handling system.

Some have suggested liquefied-petroleum gas trucks as the answer. It is true that in certain instances L-P gas trucks have emitted less carbon monoxide and bothersome odors than gasoline counterparts but the hazard remains.

Just as in the case of gasoline fork trucks, L-P gas units will produce excessive carbon monoxide if the carburetor is not properly adjusted. Frequent adjustments are required whenever either type of truck is used. And in neither case will carbon monoxide be completely eliminated.

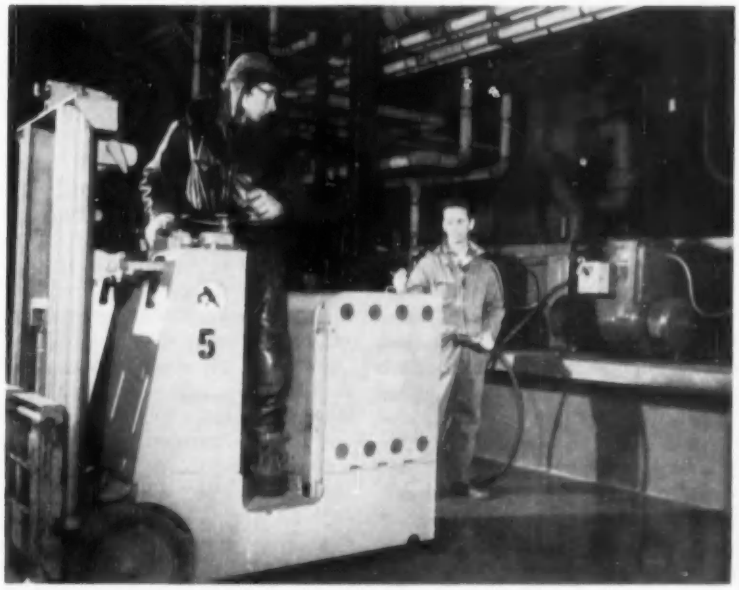
Industry has found that one of the answers to the problem is the electric fork truck. Since they burn no fuel, they produce no fumes or odors whatsoever. Batteries that power the trucks are recharged daily at stations set up in covenient locations within the plant. On multi-shift operations, batteries can be easily charged in one to three minutes with complete freedom from the fire hazard that exists when a hot gasoline engine is refueled.

Increasing numbers of fork truck users are determining their choice of electric or gasoline powered equipment on the criterion of "indoor versus outdoor" operation. If indoors, the electric is automatically selected.

Battery-powered trucks present additional advantages to bringing cleaner air to the industrial plant.

First, they cost less to operate than gas trucks. Estimates by users indicate that they may cost, in fact, less than a fourth as much to maintain and operate, and will last from two to three time as long as gas-powered trucks.

Second, because they are powered with compact batteries, the trucks themselves can be built more compactly than gasoline-powered trucks. This enables materials handling equipment manufacturers to build a rugged electric truck several inches—or even feet—more maneuverable than gas-powered trucks of comparable capacity. Thus, electric trucks can operate in aisles as little as six-feet wide, making possible great savings in floor space for warehouses and industrial establishments.



Electric truck batteries can be recharged simply. Changing them also is easy.

As a plus factor, they operate quietly. Noise control within the plant is thereby enhanced, providing more comfortable work conditions.

There has been a noticeable trend to electric-powered trucks in recent years. One big reason is that industry has come to realize that cleaner air inside the plant—as well as outside—is a responsibility of plant management. And the right solution to the problem can actually **save** dollars.

Pictures by courtesy of Lewis Shepard Products, Inc.

When should you paint or repaint steel equipment or structural members?

Should you repaint by area or by need?

What are the advantages and limitations of the various types of paints?

protective painting of metal

by **JOSEPH BIGOS**
Director of Research
Steel Structures Painting Council
Pittsburgh, Pa.

Strange as it may sound, "Don't paint," is good advice—as long as it can be followed. Numerous opportunities to eliminate painting exist. Glass blocks or translucent plastic sheets can be used in place of windows that require painting. Concrete floors can be finished in colored cement. Wall painting can be eliminated by using glazed construction tile. In toilets, kitchens, laundries, and food processing areas, ceramic tile or stainless steel can eliminate painting. If passageways become soiled at traffic levels, partial tile walls can be used. Dadoes or rub rails can reduce the area requiring repainting.

But the substitution of materials that do not require painting may not be economically feasible in specific cases. For example, steel window sash and frames are one of the costliest items to maintain in a plant. Going to wooden frames will not eliminate the problem. But the chances are great that stainless steel or aluminum windows will eliminate painting in all but the most corrosive areas.

Yet, noncorrosive window sash may not be the correct solution to the problem. An economic analysis may show that high initial cost is not warranted. The life expectancy of the building may be low or the capitalization cost too high. Perhaps it is better to invest the cost increase in additional plant capacity. The profit from the increased production capacity may offset high painting costs.

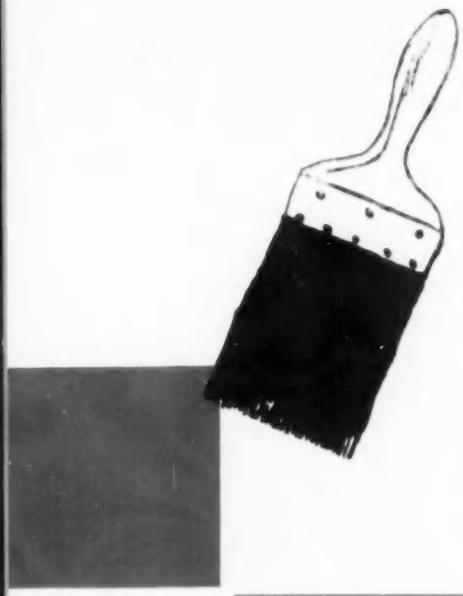
If these other considerations reject the idea of noncorrosive window sash, we are then faced with a painting problem. Galvanizing can reduce maintenance painting drastically, protecting the sash without any paint for many years in milder environments. When the zinc is about gone and BEFORE rusting begins, protective painting starts. Rusty sash is costly to clean and it is almost impossible to do a satisfactory job.

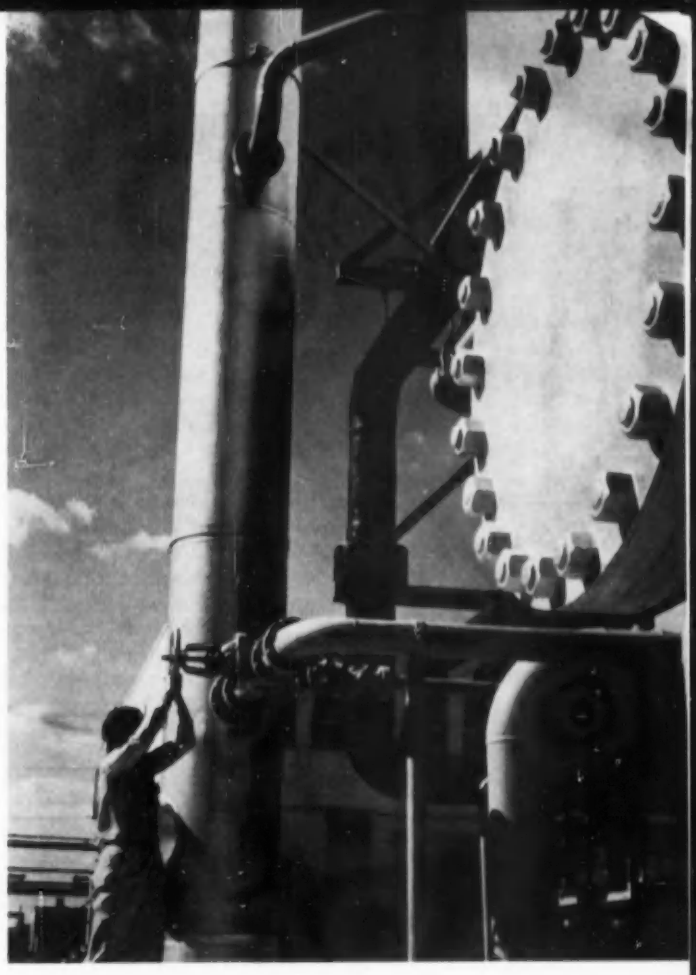
Another possibility with steel window sash is pickling and hot phosphate treatment which may more than double the life expectancy of the paint job and at a relatively small increase in investment cost. Here again, it is imperative to repaint in time. If painting is deferred, the sound surface is lost, rusting becomes widespread, and subsequent paint life becomes greatly shortened. Rusty steel, even when wirebrushed before painting, has a paint life expectancy of about one fourth of that over a good surface.

All painting is a compromise between the ideal of no painting and the optimum painting. The compromise, dictated by local conditions, should be the economical solution. But one basic point should be settled at the outset: Is the repainting for protection or appearance? It may be for either or both. It may even be functional, such as for skid resistance. In most cases, one factor or the other will be primary in determining repainting intervals. Although good protection is possible while simultaneously maintaining good appearance, maximum protection at minimum cost may not be compatible with optimum average appearance.

The Alternatives

In many cases, painting for protection is unnecessary. The slight rusting that occurs on structural steel, for example, cannot be considered structurally detrimental. It is often possible to increase the original thickness of the steel by a corrosion allowance and eliminate painting completely. But the unsightly appearance that usually results may well be the factor that calls for painting in this day of color consciousness. (Color condi-





BUILDING MAINTENANCE SERIES
other articles May & June

tioning is not money wasted since the increased production, better working conditions, elimination of hazards, and improved morale are positive compensations for the additional expense involved.)

Discounting appearance, it is often more economical to let steel rust than to repaint. Of course appearance is not a consideration in this case. By adding an increase in thickness as a corrosion allowance to the original design requirement, any desired length of life may be achieved. A pitting factor must be allowed due to the localized nature of corrosion which may cause failure at a pit or notch. In some cases, for fabricated and erected steel which costs as much as 20 to 25 cents per pound, it is about as cheap to paint as to add a corrosion allowance.

To achieve minimum maintenance painting cost, push the annual painting cost per square foot of surface to a minimum through proper surface preparation, proper paint application, and proper selection of paints and coatings. High initial costs may be frightening, but the real test of painting economy is the cost per square foot divided by the years of service between repaintings. Even this analysis does not go far enough. Very high initial surface preparation costs may be depreciated over a cycle of repaintings if follow-up preventive maintenance painting is undertaken early enough to protect the original investment in surface preparation for the first painting.

When to Paint

In some plants, "out-of-face" painting works best. This scheme repaints on a schedule that includes everything in a given area. Some items will be past due for painting and some will be repainted too soon. This complete repaint may take place while the plant is shut down or on vacation. The reduction in painting cost achieved by concentrated effort may offset any losses by painting too late or too soon. Some plants use this procedure because of necessity. It may be impossible to paint during normal working operations because of safety conditions or possibility of product contamination. Sparks from cleaning tools may ignite flammable mixtures, or paint fumes may spoil the taste of a bottle of beer.

The key to economical out-of-face painting lies in adjustment of the repaint systems to local conditions. Before painting begins, a careful, detailed inspection establishes the degree of surface preparation, methods of application, and paints to be applied. The items that are being painted too soon may require only a wash and one coat of finish paint. This may keep them in satisfactory condition until the next repaint. The items which went too long without painting may require extensive surface preparation and complete recoating. Manpower and time are not wasted on needless work but are concentrated on the critical items, planning that they will last until the next repaint, at least.

The other method of painting is to coat when necessary. Here, the critical factor in deciding when and

Selection of Paints for Steel

1. OIL BASE PAINT SYSTEMS. Systems with vehicles which are oil base materials or contain significant quantities of free oil are intended primarily for structural steel exposed to atmospheric conditions. They are particularly suitable for weather exposure, but they may be used for the interiors of buildings which are subjected to moderately corrosive conditions. Such systems have only limited resistance to chemical exposure, brine, high humidity, burial, very corrosive environment, or abrasion. Complete removal of mill scale or rust is not required due to the excellent wetting of the vehicles, but thorough surface preparation is mandatory for satisfactory service in corrosive environments. Where conditions are more severe than normally encountered (such as blast furnaces, round houses, and heavy industrial atmospheres) or where faster drying top coats are desired, alkyd finish paints should be selected rather than oil finish paints. If conditions are even more severe (such as steel exposed to brine drippings or quench tower spray) phenolic finish paints are a good solution, especially if conditions of high humidity, condensation, water immersion or spillage overflow are to be encountered. For steel that requires brightly colored finishes or high gloss, there are numerous medium oil length alkyds which may be used over thoroughly dried linseed oil primers.

2. ALKYD PAINT SYSTEMS. Alkyd paint systems are intended primarily for structural steel exposed to atmospheric conditions; they may be used for infrequent immersion in fresh or salt water, or infrequent exposure condensation. They are particularly suited for severe weather exposure, but they may also be used in interiors of buildings which are subjected to corrosive conditions such as mild chemical exposure, high humidity or infrequent condensation. Alkyd paints have only a limited resistance to strongly chemical environments, complete immersion, burial or severe abrasion. Because of the reduced performance of the primers on dirty, oily or rusty steel, blast cleaning or pickling of the steel is the minimum surface preparation for new work. In maintenance painting when only small areas need to be cleaned, hand or power tool cleaning may suffice if thoroughly done. Due to the more resistant nature of the alkyd vehicle, typical industrial plants will maintain better appearance for longer periods than if oil base finish coats are used. Typical structures suitable for these systems include blast furnaces, industrial buildings, chemical plants (yard areas or mild interiors only), interiors of buildings exposed to high humidity (but where there is no continuous condensation), belt conveyors, portable equipment, mechanized equipment, etc. The alkyd primers are particularly satisfactory where colored high gloss enamel finishes are desired such as on transport equipment, machinery, and where appearance is the primary consideration. Alkyd finish paints to match safety colors and identification colors of standard codes are available.

3. PHENOLIC PAINT SYSTEMS. Phenolic paint systems are used primarily for structural steel immersed in fresh water, or exposed to high humidity with continuous condensation, or steel that is alternately immersed in fresh water and then exposed to the atmosphere. They are also suitable for moderately severe chemical atmospheres that are neither strongly alkaline or strongly acid. Phenolic paint systems are satisfactory for exposure to brine or salt water if the proper selection of primer and topcoat is made. Such systems are satisfactory also for exterior or interior use, but they should be used for the interiors of the building only when

(Continued on opposite page)

how to repaint is whether painting is primarily for protection or for appearance. It is axiomatic, in painting for protection, that the maximum dry thickness of paint or coating be achieved. All other factors being equal, the protection afforded by a coating is proportional to its thickness. Since get-ready, surface preparation, scaffolding, and such items are a fixed amount for a job, increasing the number of coats of paint adds a minor increase to the total cost, not an increase directly proportional to the number of coats. Painters should achieve the **minimum** coverage in square feet per gallon of paint, rather than stretching out paint. The painting procedure should be adjusted so that repainting takes place when natural erosion thins the dry paint thickness. This prevents excessive build-up of paint with subsequent loss of adhesion and flaking.

Decorative painting strives to achieve maximum appearance at minimum cost. Repainting is usually dictated by poor appearance caused by soiling, loss of gloss, mildew or other factors which are not a function of dry paint thickness. Economy dictates the advisability of painting with **minimum** dry film thickness. Paint cost is reduced by getting the **maximum** coverage in square feet per gallon that is consistent with satisfactory appearance—and durability when paint durability is a factor. By keeping such paint films thin as possible, costs are reduced because the number of coats of paint are kept to a minimum. Here it pays to experiment. One brand of paint may require two coats of paint for satisfactory hiding. Another brand or type may cover satisfactorily in one coat. Surface preparation costs in subsequent repaints are reduced by keeping these paint films thin. Removal of old paint is quite expensive. Judicious choice of paint and attention to detail may eliminate the need for removal of old paint. Washing or steam cleaning often effects a two fold economy. Much repainting cost is avoided and cost of painting that is eventually necessary is lower because it is not necessary to remove old paint.

When painting is both for protection and appearance, then paints

should be applied at the thickness required for satisfactory protection. Maximum appearance is maintained at minimum cost by (1) maintaining integrity of surface by adequate protection (2) selection of paints for finish coats which have maximum color and gloss retention. When finish paints cannot maintain appearance for satisfactory lengths of time, then appearance can be restored by addition of a finish coat applied before breakdown of the underlying coats requires cleaning and repriming.

Painting of Ferrous Metals

The greatest problems in maintenance painting are associated with ferrous metals. It is imperative that rust be removed down to sound metal before painting. If primers with good wetting power are used, it is possible to paint over the slight residues of rust that are almost impossible to remove by methods short of blast cleaning or pickling. These are, without exception, slow drying primers.

Weathering of steel to remove mill scale should be followed by sandblasting. This procedure—covered by Steel Structures Painting Council Surface Preparation Specification No. 9—results in good surface preparation at moderate cost. Weathering followed by wire brushing leaves considerable rust on the steel and the Steel Structure Painting Council considers this a poor method of surface preparation. It can be tolerated only in very mild climates or when removal of mill scale is imperative and better methods are impossible.

Solvent Problems

The anchor pattern produced by the surface preparation must be conducive to good paint adhesion and bonding. Solvent cleaning, improperly done, may leave a residue of oil and grease in a thin film over the entire surface, decreasing the attractive force between the paint and the surface.

If the film is thick, there may be a complete lack of paint adhesion. Also, excessive power wire brushing may burnish the surface, particularly in the case of mill scale, to the point that paint cannot properly adhere to the surface.

subject to corrosive conditions already mentioned. Most phenolic paints have a tendency to wet dirty, oily, or rusty surfaces poorly; blast cleaning or pickling of steel is the correct method of surface preparation. In maintenance painting, if only small areas are to be cleaned, careful hand or power tool cleaning will suffice. Typical uses include fresh water vessels and barges, aeration and humidifying equipment, antisweat coatings; interiors of laundries, bottling plants, dairies, beer cellars, ballast tanks, water tanks, sand pipes, docks, etc., where wet conditions prevail.

4. CHEMICALLY RESISTANT PAINT SYSTEMS. Paint systems with sufficient resistance to withstand exposure in chemical environments generally include the vinyl, chlorinated rubber, and epoxy materials. Such paint systems are intended for very severe exposures. One or more are generally satisfactory for most severe atmospheres. They must be used with discretion when service includes complete immersion in corrosive chemicals such as inorganic acids, alkalies and salt solutions; or immersion in solvents such as aliphatics or aromatics, alcohols, oils and grease. These systems are generally dissolved by organic solvents, although many epoxy systems have good resistance to most commonly encountered solvents. Such systems are recommended highly for immersion in fresh or salt water, exposure to high humidity and continuous condensation or weather exposure. However, upon exposure to mild weather, some of the materials will not have the durability of linseed oil paints. These systems are particularly suitable for interiors of buildings where flame resistant and mildew proof materials as well as corrosion resistant paints are desired. Because of the great increase in paint life which results, blast cleaning or pickling of steel is the minimum recommended surface preparation for new work. In maintenance painting blast cleaning is desirable, but some products are available which can be used over lesser degrees of surface preparation. Due to the great variation in the severity of various chemical exposures, and the varying resistance of synthetic materials such as these, it is desirable to obtain competent advice before selection of such systems.

5. RUST PREVENTIVE COMPOUNDS. Rust preventive compounds which are applied in thick films of the order of ⅛ of an inch are used on steel that requires long time protection in sheltered or inaccessible places, or short term (temporary) protection in corrosive environments. These materials are also used where temporary protection is required such as for machined surfaces where the coating will later be removed by solvent action. Rust preventive compounds are available in varying degrees of hardness. Generally speaking, the harder the material the longer the protection which is afforded, but the greater the difficulty of removal. Soft films are easily applied by brush or swab at temperatures of 60°F or above. These are the familiar rust preventive greases. Many of the hard film or pigmented compounds require hot application. Thick films of these compounds will provide indefinitely long protection in sheltered areas not in contact with strongly corrosive mediums. They will provide only fair protection when exposed to the weather, water or brine. They are used for protection of machinery, machined surfaces, cables, wet or damp steel, particularly in inaccessible places not subject to weather.

6. BITUMINOUS COATINGS. Under the heading of bituminous coatings are included enamels, cold applied mastics, emulsions, and simple cutbacks. Bituminous systems are available for very severe exposures. They are satisfactory for most of the severe atmospheres, but they must be used with discretion for immersion in corrosive

(Continued on next page)

Power tools, such as rotary descalers, chipping hammers, and scalers, may leave sharp ridges in the metal surface which cannot be adequately coated with paint. The same danger exists when blast cleaning with large abrasives.

May Leave Residues

Pickling operations may leave residues of hydrochloric or sulfuric acid on the metal surface unless properly rinsed and passivated. These residues of free acid will react with the metal to form sulfates and chlorides, and the residual salts are strong stimulators of corrosion. Human sweat is another strong stimulator of corrosion, and hand prints on clean metal surfaces may cause localized paint failure and corrosion.

Closely coupled with surface preparation are pretreatments which are used to further reduce the possibility of paint failure. Cold-phosphate and hot phosphate treatments convert clean, rust and scale-free steel surfaces to insoluble, crystalline layers of iron, and zinc phosphate. This phosphate has an increased corrosion resistance because of its relative inertness and high electrical resistance.

These crystalline-surface conversion coatings also improve paint performance by forming a good surface anchor for the coating; because the surface is uniform, local corrosion through dissimilar surface conditions is minimized.

Galvanized iron and steel show frequent paint failure, because of poor adhesion of paint. Although a host of cures have been advanced as pretreatments for galvanizing, practically none have merit and many are dangerous inasmuch as they cause destruction of the zinc. The phosphate pretreatments convert the surface of galvanizing to a satisfactory paint anchor. Wash-primer pretreatment is another effective method which improves adhesion of paint to metal and improves the performance of paint. It should be applied over scale and rust-free metal.

The only conventional paints which have shown merit in painting over new galvanized metal without pretreatment are the zinc-dust pigmented primers. If pretreatment is not feasible and the zinc-dust primers are not used, galvanizing must be weathered for periods of at least 6 months prior to painting.

Again, as in the case of blast cleaning or pickling; the advantage to be obtained in the use of these pretreatments must be weighed against the increase in cost. For mild atmospheric exposure conditions where ordinary cleaning and

"Just ignore him, Mabel—we didn't say he could take us to lunch!"

painting methods have proved feasible, it is difficult to justify the increased expense of pretreatment.

Remove Scale. Badly cracked and broken mill scale should be removed prior to painting. In the event this is impossible, a wetting-oil pretreatment is advantageous. The improvement obtained by using a penetrating (wetting) oil preparation prior to painting is believed to result from the saturation of the surface and the sealing of cracks in the mill scale, thus preventing rusting.

Without such pretreatment, paint does not have sufficient reserve of oil to saturate rusty surfaces and still maintain the necessary balance between pigment and vehicle. Wetting-oil pretreatments are sometimes used when quick-drying primers are specified to improve adhesion of the paint to improperly cleaned surfaces.

Film Thickness Vital

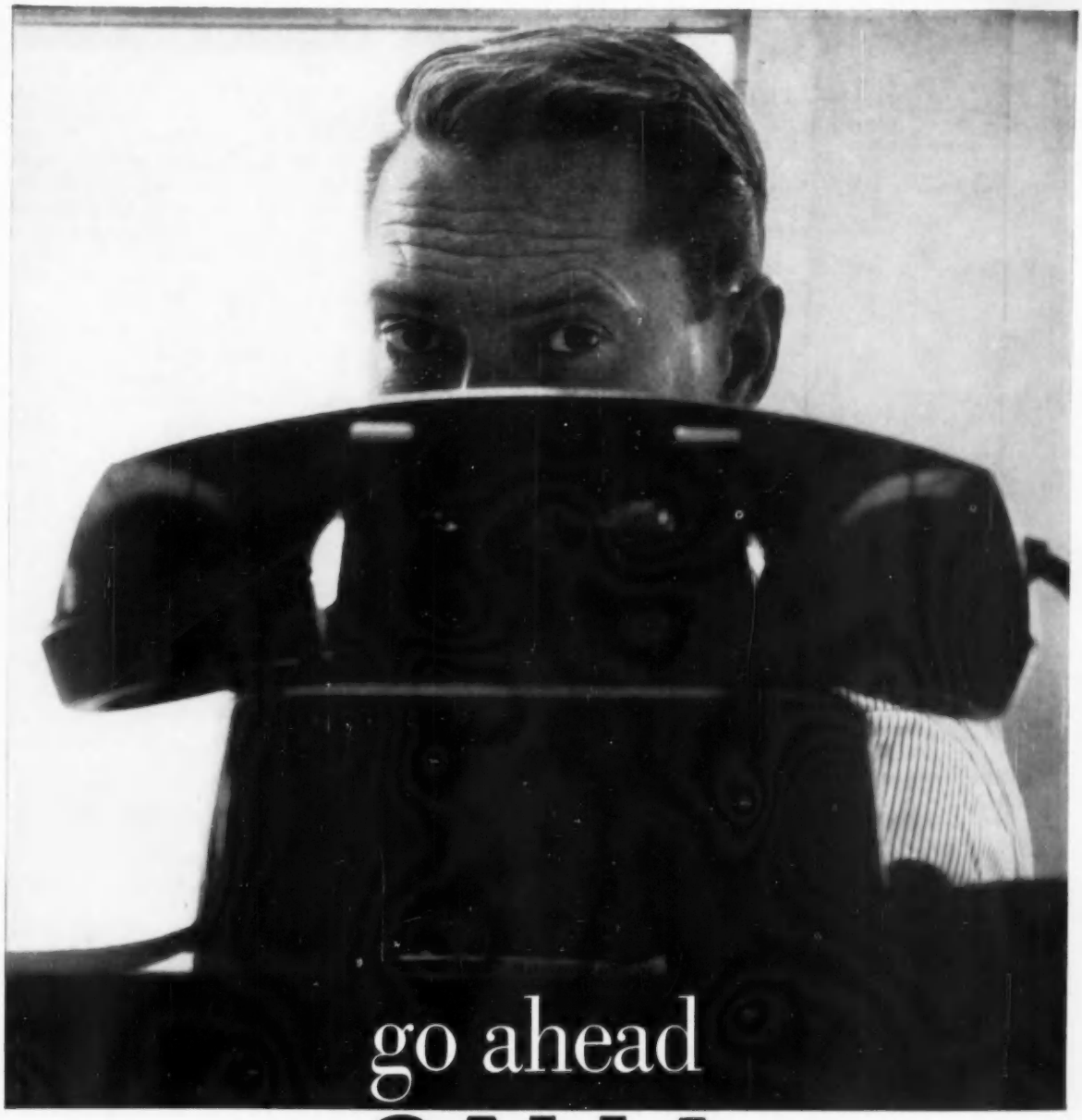
Application of paint is second in importance to surface preparation when determining the service life to be expected of a paint system. Perhaps the most important and essential feature of good application is to obtain adequate film thickness. Improper thinning of paint makes it difficult, if not impossible, to obtain adequate thickness. Thinning decreases the viscosity, makes the paint easier to apply, and increases coverage—for

(Continued on page 34)

Selection of Paints for Steel

(from page 31)

chemicals since they are dissolved by some organic solvents and attacked by some chemicals. Coal tar enamel is recommended for buried steel. Cold applied bituminous coatings may also be used underground, but with poorer results. Coal tar enamel is also suitable for water immersion, including use with potable water. Bituminous mastics—which are cutbacks filled with inert material and applied in thick film—are also used under water or in damp environments, but they are not recommended for potable water. They will not have the life that a hot enamel will have under immersion conditions. Coal tar coatings require a top coat of coal tar emulsion to prevent checking and alligatoring upon exposure to the sunlight. All of these materials are suitable for interior use, but are recommended only for very corrosive interiors. Coal tar enamel has good abrasion resistance and may be used for coating hopper interiors, exposed to corrosive and abrasive materials such as coal or wet sand. Coal tar enamel is also suitable for marine and hydraulic structures and pipe. Cold applied asphalt mastic is suitable for general use in corrosive atmospheres. It is particularly good for weather resistance and is used extensively for chemical atmospheres, applied over thoroughly cleaned surfaces and in thick films. The use of thin-film bituminous coatings or cutbacks is not generally recommended for protection.



go ahead CALL!

the fastest cure for worry about cancer: a call to your doctor now!

Scared? You shouldn't be! Look at it this way. The average man who walks into the doctor's office walks out floating. That lump that was so frightening . . . nothing to worry about at all! The sky's bluer, the air's sweeter, it's a great big beautiful day . . . because he picked up that phone and called!

It happens all the time. It can happen to *you*. "Sure," you say, "but just supposing". . . OK. Let's look at the facts. In past years, we were saving 1 out of 4 cancer patients. Today, we're saving 1 in 3. And the odds could get better still . . . if *people would call their doctors in time!*

So go ahead . . . call. See your doctor now. And after your checkup—how about a check for the American Cancer Society? Every dollar sends us further along the road to cure. And when *that* happens . . . it's going to be a wonderful day for us all! Send your check to "Cancer" in care of your local Post Office.

TABLE I

Degree of Rusting or Area Exposed	Cleaning and Painting Recommended
No rusting	Solvent clean if necessary. Apply one or two coats of finish paint depending upon conditions.
Slight rusting in localized areas	Spot clean and spot prime. Apply one or two overall coats of finish paint as necessary.
25% to 50% in localized areas	Spot clean and spot prime. Apply one overall coat of priming paint and one or two coats of finish paint as necessary.
Over 50%	Remove as much old paint as is practical. Apply two priming coats and one finish coat, or one priming coat and two finish coats as necessary.

Protective Painting
(from page 32)

these reasons, frequently there is detrimental over-thinning of paint.

The repainting of steel, for optimum performance, generally should follow this guide:

Generally speaking, it is most desirable to maintain paint systems by a scheduled inspection and repair procedure. In this manner, the life of the coating is prolonged through preventive maintenance which includes spot cleaning and spot painting when necessary. It is impossible to set down general rules that should govern the repainting intervals or time. The procedure in Table I is a summation of current practice in the field today.

The advisability of removing any large amount of sound, adherent paint which is not too thick to be detrimental may be questionable. In such cases, the procedure may be altered to spot cleaning only the bad areas and applying enough coats of rust inhibitive priming paint over those areas to build them up to a satisfactory level, then, an overall finish coat is applied, or two finish coats if necessary.

Selection of specific paints for specific purposes obviously depends upon particular plant conditions. The accompanying general guide summarizes current thinking for steel structures, incidental steel work, and steel equipment.

Painting of non-ferrous materials is generally not as critical an item as painting of ferrous materials. There are of course exceptions to this general statement, but the variation in surface preparation and materials is great with less effect upon results.

From an address presented at the 8th Plant Maintenance & Engineering Conference and Show. Picture by courtesy of E. I. du Pont de Nemours & Co., Inc.

Wise Workers Become Wise Owls

Because James H. Webb, auto mechanic, and Harold C. Hansen, general repairman, heeded the safety rules of their company—the Salt River Power District—and wore safety glasses, they not only saved their eyesight but became the first members of the utility to join the nationally-known Wise Owl Club of America.

The Club is sponsored by the National Society for the Prevention of Blindness and its members are working men and women who have saved themselves from loss of vision of one or both eyes by wearing eye-protective equipment.

James Webb was changing a gasoline line on a pickup at the utility's Western Line Division one evening and had washed it out several times. He noticed that the sump pump refused to cut off. Webb pulled out the plug of the sump pump and the pump exploded. Only the alertness of a fellow employee in applying a fire extinguisher saved Webb's life. Although Webb suffered second and third degree burns over his body, an eye specialist indicated that only the wearing of the safety glasses prevented a loss of vision for Webb.

Harold C. Hansen was at work in the Construction & Maintenance headquarters of the utility when the bench grinder he was operating suddenly broke while turning at 3,200 RPM. A piece of the emery wheel struck and shattered the right lens of the safety goggles worn by the repairman. Authorities insist that ordinary glasses would have provided no protection for him. The safety glasses prevented a possible loss of the eye.

Webb and Hansen were presented handsome certificates, gold lapel pins and shop badges.

About 7,500 members are enrolled in the Wise Owl Club which was founded in 1947 with headquarters in New York City. Authorities in the Club estimate that throughout the Nation, there were about 300,000 eye injuries of varying degrees last year.

To qualify for membership in the Club, the potential member must present his case to the local committee and upon approval there, the case is sent along to the national headquarters. It is not necessary that the protective equipment be damaged.

Safety Engineer Available

Experienced all phases of accident prevention, safety programs for industry and truck fleets. Specialist in fields of compensation, machinery and supervisor's duties. Eight years experience with leading casualty insurance company. Write to: Box 463, c/o Safety Maintenance, 75 Fulton St., New York 38, N. Y.

Accident Come-Back?
(from page 25)

greater or less than the estimate of 40,000.

Deaths from work accidents in 1956 totaled 14,300—an increase of 100 from 1955. Total all-industry employment was about 3 percent more than in 1955, while manufacturing employment alone went up 2 percent.

Disabling injuries from work accidents numbered approximately 2,000,000 compared with 1,950,000 in 1955. Economic loss from work accidents was about $3,600,000,000.

Preliminary reports indicate that coal mine deaths in the first nine months increased by 27 in 1956 from the 359 toll for the same months in 1955. Railroad employee fatalities were 167 in the first nine months of 1956, the latest figures available, compared with 178 in the same months of 1955.

Work accident rates on a national basis are not yet available, but there apparently was little change from 1955. Injuries totaled 50,000 more than in 1955, but a small increase in employment plus no change in average hours worked per week approximately offset the the rise in injuries.

Deaths to workers from all accident causes totaled 45,100—14,300 on the job and 30,800 off the job. This is an increase of 100 deaths over 1955. Injuries were about 4,350,000.

Total time lost in 1956—direct and indirect—was 295,000,000 mandays, equivalent to the shut-down of plants with about one million workers for an entire year.

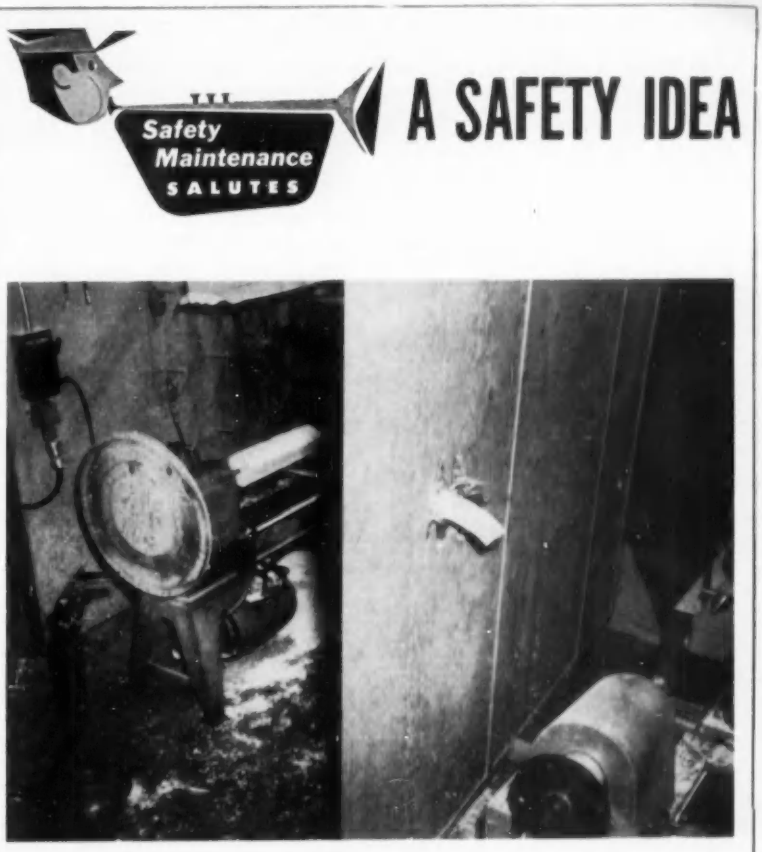
A complete listing of work accident rates by industry will not be available for several months, the Council said. Detailed summaries on all accidents are published each year in the Council's statistical yearbook, "Accident Facts."

The preliminary figures released by the Council are borne out by accident rate estimates from the Bureau of Labor Statistics of the U. S. Department of Labor. The Bureau's report presents preliminary figures on injuries in the various injury groups, as follows:

Some increase in the volume of injuries occurred in contract construction, manufacturing, transportation, trade, and the finance, service, government, and miscellaneous division. The record for mining remained unchanged and those for agriculture and public utilities showed slight decreases.

The largest increase (7 percent) was in the finance, service, government, and miscellaneous division, mainly attributable to higher levels of employment in State and local government and in the finance and service industries. Injuries to Federal employees increased only slightly, according to preliminary reports.

Injuries in trade increased in about the same proportion as did employment. In transportation, increased employment in trucking and warehousing and in air transportation contributed to the in-



A SAFETY IDEA

Barrier Saves Man's Life

It happened when an aircraft part worked itself loose from a wood lathe spinning at 1500 rpm in the wood shop of Douglas Aircraft Company, Santa Monica, California. The wooden missile catapulted off the lathe and hurtled through the air towards another workman who was making adjustments on a nearby machine.

The wooden missile smashed against and partly through a fir plywood barrier—only inches from the man's head. "Man, I could of been killed," the workman later said. And he was right. Either that or, crippled for life.

Fortunately, Douglas Aircraft Company safety engineers had foreseen the hazard. Only months before they had erected barrier walls consisting of three panels of ¾-inch fir plywood. The barriers were set between each of the shop's six lathes.

The six fir plywood walls cost the firm only $95, a small sum compared with the costs which might have arisen had the workman been injured.

crease in the volume of injuries. Injuries to railroad workers increased about 4 percent, despite a slight decrease in employment in this field.

Construction Better

In contract construction the increase in injuries was much smaller than the increase in employment, indicating a slight decrease in the injury rate. Preliminary reports indicate the injury rate for manufacturing is holding at the record lows established during the previous 2 years, and the volume of injuries increased only fractionally.

The volume of injuries in bituminous coal mining, metal mining, quarrying, and crude petroleum production remained about the same, despite increases in employment in these fields. In anthracite mines both employment and injuries declined, but employment declined more than did injuries. The injury total for all mining remained virtually unchanged from 1955.

There was a slight decrease in injuries in public utilities despite an increase in employment. The decrease in injuries for agriculture was somewhat less than that in employment.

(For details, use Key # C-13 on card on page 73)

Goal: 100% Safe

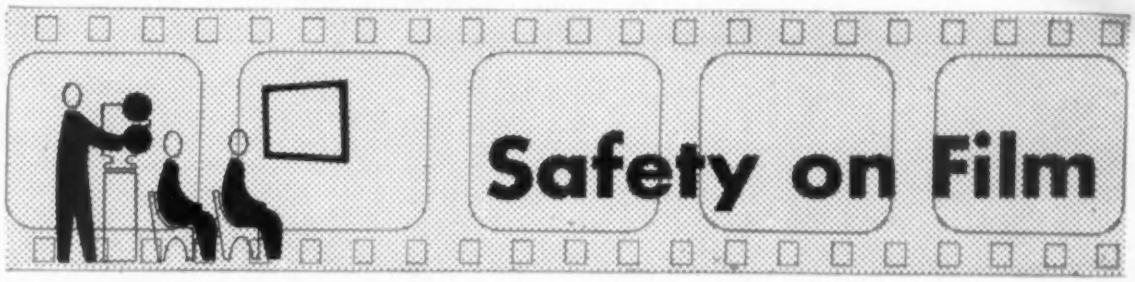
With employees already several times safer at work than at home, the Du Pont Company is spending well over $4 million this year, plus a far greater but incalculable cost in effort, in a determined endeavor to have each and every one go a whole year without injury. This is the direct expense; the full cost may run 10 to 15 times as much—or more.

Du Pont's over-all injury rate is exceptionally low; the safety program is intensive and continuous. The company has its sights set on a perfect record. That would mean 100,000 people (including those on government-owned plants) getting along on the job without anybody being hurt—men and women who not only face normal living hazards but also are concerned with the production and compounding of potentially dangerous chemicals in addition to working with the normal tools of production like steam, electricity and heavy machinery.

So many people have never realized such a goal anywhere, so far as Du Pont officials know. They are trying to get there in two stages: first, a completely injury-free month and, beyond that, the elusive goal of a full year without injury to anybody.

The injury rate the company is worrying about has been dwindling toward the vanishing point but has not yet reached it. The record has brought the company national recognition over the years.

The company is also hoping that employees will carry their training in safety off the job with them and is encouraging them to do so. One of the national awards it received last year was for its activity in prevention of home accidents.



Safety Shoe Film

A new 20-minute motion picture, "The Margin of Safety," recently released by Hy-Test Safety Shoes, Division of International Shoe Company, depicts the logic and necessity of industrial plant safety and the need for wearing safety shoes. The black and white film is directed to supervisory personnel and safety directors, and is also well suited for viewing by plant workers to emphasize the importance of protective apparel.

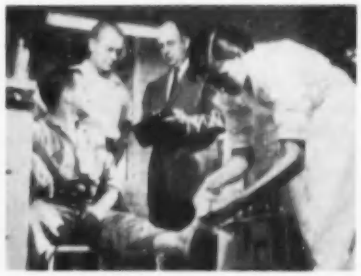
To stress dramatically the need for management support of plant safety programs, the film employs a realistic plot and a "voice over" narration technique. The voice is that of Steve Bendarik, a capable plant foreman who is in line for promotion to general foreman. At the start, it is made clear that the only obstacles in the way of the promotion are the loose safety record in Steve's section and Steve's failure to believe that it is his function to promote precautionary measures. In his plain and to-the-point style of speaking, Steve tells of how he slowly began to realize the importance of safety measures, including the use of safety shoes, through a series of personal experiences.

He explains how his eyes were opened by the quality control chart, by various potential accident situations in the plant, by the plant safety shoe salesman, and by narrow escapes from injury experienced by him and his wife's young brother. At the film's end, Steve relates his calling of a safety meeting in which he successfully urged his men to adopt safety procedures and safety shoes. As Steve's voice is heard narrating the story, the visual portion of the film shows the tale unfold through skillful and unusual camera work. It excellently pictures the attitudes and reactions of the workers toward safety, and offers vivid shots of the accident-prone plant operation.

The new film supplements the previous Hy-Test motion picture, "One Ounce of Safety." Both films are available free of charge for showings to groups interested in plant safety. Information for obtaining them will be forwarded by the Editor of SAFETY MAINTENANCE.

Steve, principal in a new safety film, disregards need for industrial protective measures, but changes view after seeing how safety shoes prevented bad accident.

Not yet convinced, Steve investigates safety shoes worn by brother-in-law.



Steve's indifference weakens when he sees results of failure to use shoes.

A break for men who wear hoods!

New Bullard abrasive blasting helmets and lead discing helmets are extra lightweight. Wear them for hours without fatigue. Protection from overhead hazards is afforded by a "HARD BOILED" aluminum hat used as a headpiece.

Wearer has clear, wide angle visibility through large hinged plastic face piece. To diminish abrasive pitting, perforated metal screen slides over face piece.

Cape is lightweight, double coated plastic with dust-proof self adjusting inner neckband.

USE CLEAN MOISTURE-FREE AIR

Wherever compressed air is used in helmets, tools or painting, a Bullard purifier hooked into the system dries and cleans air from compressor — protecting men and materials.

Write for catalog and specifications of Bullard protective hoods and air purifying equipment.

E. D. BULLARD COMPANY, Sausalito, California

BULLARD
INDUSTRIAL SAFETY EQUIPMENT

(Use Key # C-14 on Inquiry Card on page 73)

Maintenance Grows

Color Engineering

Sponsors of the 3rd Western Plant Maintenance and Engineering Show scheduled for San Francisco June 11–13, state more than 40,000 industrial plants are finding scientific maintenance a major activity in which big cost reductions can be achieved. They are constantly looking for new methods, equipment and material with which to up-date their operations and reduce costs, says W. P. Fuller III, member of the Board of Sponsors.

The phenomenal industrial growth that has taken place in the West has kept plant operators so hard-pressed to keep facilities in operable condition that it has been only during recent years that serious consideration could be given to implementing cost reducing maintenance and operating techniques. He said, however, that quest for latest technology in this field is now being conducted with the same vigor as enabled plant operators to catch up with the West's growing production demands.

A good example of achievements that have been made is smart use of paints and protective coatings. Mr. Fuller cited a few examples of advanced in-plant use of paint. "California Spring Co. has color-engineered its new plant in Los Angeles," said Mr. Fuller, "and the finest in efficiency, production and over-all atmosphere of cheerfulness was the result.

"Operators of this new plant even broke a few 'rules of the trade' in selecting colors used and painted equipment, walls and floors in light, almost pastel shades. This is just one example of the open-minded thinking that is going into plant maintenance and engineering in Western plants today. It has long been plant operating convention to paint equipment in dark, drab colors because a more easily maintained and repainted surface was supposedly obtained. However, California Spring found that the lighter, more attractive colors instilled greater worker-pride toward equipment. Different colors—blended in compatible tones—were used for the plant's 17 departments, thus providing quick departmental identification.

"Other gains made through color-engineering in this new plant include a bright and cheery atmosphere, a plant that presents easy vision and no eye strain for its workers, more thrifty use of artificial lighting facilities, a peak in worker-productivity, excellent morale and very few accidents.

"Victor Equipment Co. in San Francisco enamel coated 184 machines in its plant not long ago," Mr. Fuller continued. "Manufacturers of flame metal cut ng and welding equipment and accessories, Victor reports that the enamel coating resists abrasion and will undoubtedly add years to the life of the machinery. Green, red and grey machinery and equipment enamel were used and the paint application has resulted in reduced maintenance, improved worker morale and a boost in both production and safety.

"Easy identification of plant equipment was provided by Victor's paint job because manifolds, pipes, pipe fittings and all machinery were painted green, as were oxygen tanks, cylinders and metal carriages. Generators were painted red and dark grey. Victor found the paint application so successful that the same coating process is being considered for its Ventura, San Diego, Sacramento, Oakland, Fresno and Los Angeles, California district plants.

"Color engineering and selecting protective coatings for given industrial applications are matters requiring plenty of know-how. Many factors, such as type of manufacture involved, geographical location of the plant and blending of colors with existing coatings, must be considered. With clarification of such matters set as its goal, the Third Western Plant Maintenance and Engineering Show and Conference in San Francisco's Civic Auditorium will be extremely valuable in up-dating plant operator know-how in the paint and protective coating field and the many other areas of plant operation in which cost reductions can be achieved."

Much of the available exhibit space for this show has already been contracted by suppliers of plant maintenance and engineering

equipment and materials. Each display will be designed to meet the specific needs of Western plant operators. The concurrently scheduled plant maintenance and engineering conference will include Western authorities on the many subjects that constitute problem areas in Western manufacturing and processing plants. In addition to presenting views and knowledge of these experts, the conference is designed to provide an opportunity for idea exchange among the many engineers who will attend. This will be accomplished through discussion periods scheduled to be held during the latter part of each session.

Exhibit space may be secured through Clapp & Poliak's New York office at 341 Madison Avenue, or the San Francisco office, 681 Market Street.

Materials Handling Show

With about 250 companies expected to use over 100,000 square feet of exhibit space, the 7th National Materials Handling Exposition, to be held at Convention Hall, Philadelphia, April 29 through May 3, is expected to exceed its predecessor by more than 15 per cent in size, it was revealed by Clapp & Poliak, Inc., the exposition management.

The show will emphasize systems of materials handling rather than any particular piece of equipment. Over 100 types of equipment will be demonstrated.

Theme for the 1957 show will be "Materials Handling, Key to Automation."

Thirty-two speakers will address a conference conducted by the American Material Handling Society, April 30–May 2. On May 1, the society will hold its annual banquet at the Bellevue-Stratford Hotel, where annual awards and honors will be presented.

The conference, too, will stress systems and is expected to break all previous records for attendance, according to Herbert S. Jones, Dominion Bridge Co., Ltd., Montreal, society president.

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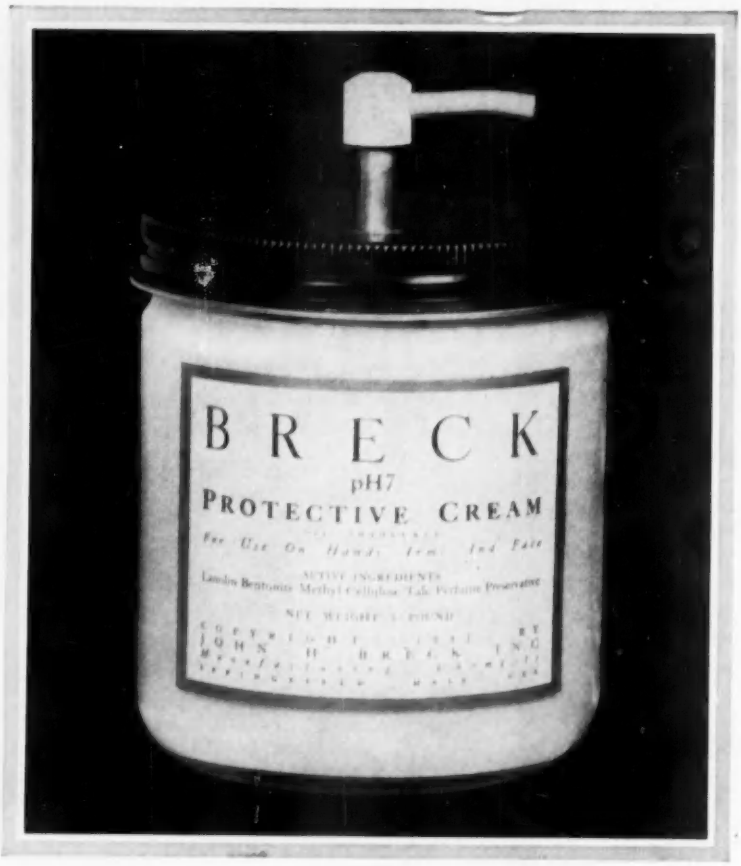
(For details, use Key # C-15 on card on page 73)



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p H 7 P R O T E C T I V E C R E A M

Breck pH7 Protective Cream covers the skin with an invisible, oil-resistant film which is neither slippery nor sticky. This neutral film prevents contact of irritants with the skin. Breck pH7 Protective Cream is effective against such irritants as lubricating oils, grease, aromatic and hydrocarbon solvents, cutting compounds, synthetic resins, rubber dust, fiber glass, paint, duplicating inks and iron dust. Breck pH7 Protective Cream is easily removed with Breck Hand Cleaner or with soap and water, making the use of harsh cleansers unnecessary.

A Breck Industrial Preparations Booklet will be forwarded to you upon request.

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(For details, use Key # C-16 on card on page 73)

industrial hygiene

Edited in cooperation with
OCCUPATIONAL HEALTH INSTITUTE
Educational affiliate of
INDUSTRIAL MEDICAL ASSOCIATION

Industrial Health Conference

The Twelfth National Industrial Health Conference will be held at Kiel Auditorium, St. Louis, Missouri, April 20–26, 1957. This Conference annually brings together the five organizations whose members are responsible for maintaining the health of the nation's industrial workers: the Industrial Medical Association; the American Industrial Hygiene Association; the American Association of Industrial Nurses; the American Conference of Governmental Industrial Hygienists; and the American Association of Industrial Dentists.

Some 200 of the country's leading specialists and experts in the complexities and technicalities of preventive medicine and hygiene in industry will present the latest findings and developments relating to: occupational diseases and injuries; non-occupational conditions in employment; mental health; psychological testing; rehabilitation and physical therapy; geriatrics and retirement; problem drinking; noise; air pollution; toxicology; radiation; administrative medicine; cancer as an industrial health problem; the relation of the general practitioner to industrial work; dental health; the medical witness in the courtroom; death patterns in industry; respiratory protection; and engineering and analytical chemistry as related to industrial health, together with numerous other subjects of present-day medical and scientific importance.

Hygiene Products to be Shown

More than 100 Technical Exhibits will be displayed throughout the Conference. The Exhibits are designed to acquaint the industrial physician with all the latest developments in products and equipment that will aid him in his work.

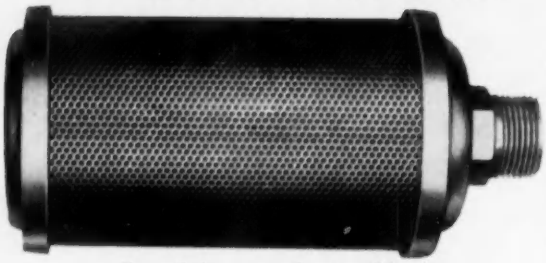
The formal sessions—more than 40 in number—include symposiums and panel discussions on subjects of timely interest; special meetings of the various groups; and conferences of special Committees. In addition, there will be meetings of company physicians —steel, oil, electric, auto—starting with the all-day conference of General Motors physicians on Monday, April 22.

Feature of the formal opening session will be the C. O. Sappington Memorial Lecture, by Frank Curtis, Vice-President, Monsanto Chemical Company, and Past-President, American Institute of Chemical Engineers. The Donald E. Cummings Memorial Lecture will be given by H. H. Schrenk, Ph.D., Industrial Hygiene Foundation.

The annual Industrial Health Conference provides an unexcelled opportunity for postgraduate study of new ways to improve and preserve the health of the American worker. Its purpose is the continuing enlightenment of all who are interested in the broad and important field of industrial health—industrial physicians and surgeons, industrial hygienists, industrial nurses, industrial dentists, and representatives of management, together with physicians in general practice who have industrial affiliations. All are invited.

Jerome W. Shilling, M.D., Medical Director, Pacific Telephone and Telegraph Company, Los Angeles, and President-Elect of the Industrial Medical Association, is General Chairman of the Conference. Richard A. Sutter, M.D., St. Louis, is Deputy General Chairman. The complete program may be obtained by writing E. C. Holmblad, M.D., Managing Director, Industrial Medical Association, 28 East Jackson Boulevard, Chicago 4, Ill.

AIR EXHAUST MUFFLER



For Silencing Noisy Blasts of Air-operated Equipment

Designed to eliminate objectionable noise of compressed air, the **Atomuffler** is particularly suitable for silencing exhaust noise of air-operated equipment where the noise factor produces abnormal fatigue and deteriorates employee efficiency.

The **Atomuffler** is one of the most efficient pneumatic attenuators available. Laboratory and field tests indicate better than 99% noise intensity reduction with negligible mechanical impedance.

The **Atomuffler** utilizes a patented lateral-radial flow principle. The porous air diffuser combined with an acoustical resonator is arranged to provide maximum noise cancellation. A four-port deflector suppresses intensity by guiding air streams in opposing channels expending energy by collision, resulting in sound cancellation. The extended escape area minimizes exhaust air blast, virtually eliminating oil fog and water spray. Exhaust air is evenly distributed outwardly in soft radial fan-like pattern. The high ratio of surface radiation area provides uniform performance whether air is dry or heavily saturated.

These units are compact, provided with a male pipe thread connection for greater ease of installation and can be mounted in any position.

Sizes range from ¼" to 2" standard pipe size. Catalog MS-574 available. **Write ALLIED WITAN COMPANY, 12500 Bellaire Road, Cleveland 11, Ohio.**

(For details, use Key # C-17 on card on page 73)

NEW! Tissue-Thin Pylox™ Gloves

Nimble Fingers™ by PIONEER

Thinner than surgical gloves for jobs requiring extreme finger sensitivity. Wear all day in comfort. Resists normal acids, alkalis, oils, greases, some solvents. Smooth outside, textured inside . . . reversible for non-slip grip. Sizes small, medium, and large. Let PIONEER help you select proper gloves for your job from the complete PIONEER line.

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The name of my nearest PIONEER Glove Distributor.
1956-57 PIONEER Industrial Glove Catalog.
Hand Protection Clinic glove recommendation for job described in enclosed letter.

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Mail This Coupon Today

(For details, use Key # C-18 on card on page 73)

On the Smog Front

Doctor W. L. Faith, managing director of the Air Pollution Foundation, is convinced that we could largely eliminate "smog as we know it" by October 1, 1957, if two specific gains could be announced on that date:

(1) that incineration of refuse is "really outlawed" by that date;

(2) that the auto exhaust problem had been solved.

Dr. Faith said that even if these two accomplishments were then a matter of record, there still might be occasional local nuisances in certain industrial areas, but the great majority of people would not be affected.

As a panelist at the Second Conference on the Elimination of Air Pollution, he stated that the amount of auto exhaust, which must be controlled in order to end eye-smarting smog, is still unknown. Faith emphasized there is adequate data to show that auto exhaust is a major smog former in the Los Angeles atmosphere.

Basic Need for Research

In answering the question, "What appears to be needed, and who is going to do it?" Faith said that the basic needs are:

1. A firm estimate of the amount of hydrocarbons that can be eliminated by the use of an induction device.

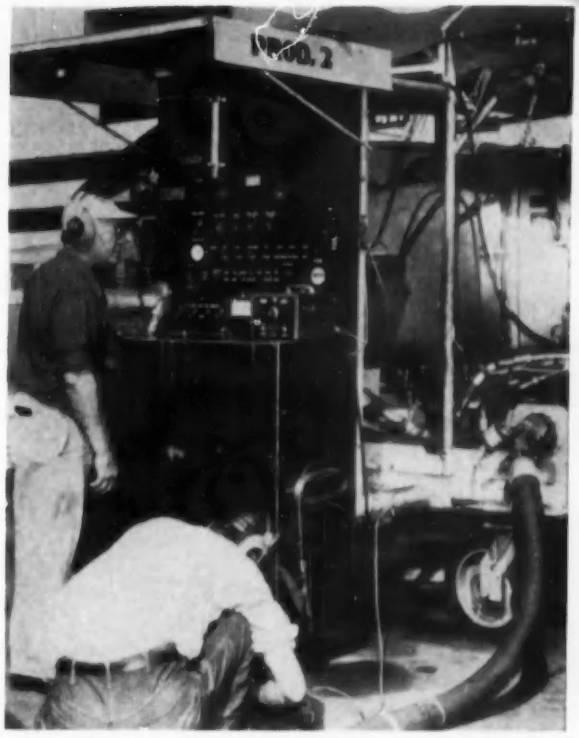
2. Determine the smog-forming potential of individual hydrocarbons or classes of hydrocarbons present in auto exhaust. He said this study is necessary before an adequate analytical method can be devised. It must further be determined if each class or species of hydrocarbons contributes in identical or dissimilar ways to oxidant, eye irritation, vegetation damage, and restricted visibility.

3. Identify specifically the extremely complex role of oxides of nitrogen in the smog-forming reaction. He said this involves determination of the type and amount of oxides of nitrogen in the exhaust of an average automobile. The primary problem, he pointed out, is to determine if nitrogen oxides diminish or decrease in importance as hydrocarbons are reduced.

4. Continue the development and testing work on induction devices because it's too early to assume that an induction device in combination with some other device—say, a nitrogen oxide reducer—will not contribute greatly to smog elimination. Faith said the current disappointment in this field may be based on unsuitable analytical methods, so development work must continue.

5. Study exhaust-system devices at a much increased rate of effort. Here again, basic knowledge must be acquired before engineering studies can be initiated. He said that the most important facet is the fundamental work on the requirements of any oxidation system and the building of catalysts that will operate effectively in the presence of lead compounds. In the meantime, he said, studies of afterburner design can well be pushed.

they silenced the jet's scream



Men working at this plant on testing of jet engines guard their hearing with ear-muff type protectors.

Noise, a major safety factor in industry, poses special problems in the aircraft field because of its prevalence and intensity. One aircraft manufacturer, McDonnell Aircraft Corporation of St. Louis, has spent more than $2 million on an extensive program of noise attenuation which reduces ramp noise to an acceptable level in communities surrounding the airport.

In addition to 17 sound muffling units now in operation, the company is constructing three "hush houses" —large concrete structures which completely envelop the airplane being tested.

Solution of the noise problem was a must for McDonnell, which tests jet aircraft engines before mounting them in McDonnell-produced planes such as the Navy Banshee and Demon fighters and the Air Force F-101A Voodoo, a supersonic long-range strategic fighter. Engines are set up on special ground test ramps to determine air effectiveness—resulting in a special problem noise because of its prevalence and intensity.

"The noise is so intense around the test ramps," according to Al Grosse, McDonnell safety supervisor, "that it is necessary to have some kind of ear protection just to be in the area. Otherwise, there's a strong probability that the inner ear would be damaged."

Mr. Gross said his company's answer to the noise problem for engine test crews is an ear-muff type protector. It resembles a set of radio headphones, but the ear pieces are large cushions made of a soft, spongy material which cover the ear and soak up dangerous, large-amplitude sound waves. These cushions are hollowed to fit the ear comfortably while providing an effective acoustical seal. The cushions are detachable from the strong springs of the adjustable head-set.

The ear protector was developed on the basis of extensive Air Force Aero Medical Laboratory and the manufacturer's studies and is designed chiefly for men who must enter or leave noisy areas at frequent intervals. Easy to put on or remove, the equipment is also used by personnel testing guns on the McDonnell gunnery range before the weapons are mounted to planes. Although it is mandatory only around the test ramp, the protector is also worn by each company employee in any area where noise is a problem.

"Hush Houses" muffle the roar of the Banshee, Demon and Vodoo and ear protectors guard the jet tamers

Need for Employee Protection

The protective mufflers are stored in the company's central tool crib and requisitioned by department supervisors, who issue them to the men. Once a set is issued, the man who gets it is responsible for taking care of it.

Pointing out the necessity of such ear protection, Mr. Grosse said the average factory has an overall sound level of about 75 decibels.

"Sound, lower in intensity than 85 decibels, is believed by many authorities to be harmless," he continued. "The noise peak is some industries ranges up to 120 decibels—one million times more sound energy than that in the average office."

(Continued on page 47)

Industry's Challenging
Good Health Is Good

by **J. F. McCAHAN, M.D.***
Medical Director
Loss Prevention Medical Service
Liberty Mutual Insurance Company

Because industry brings large numbers of employees together daily, it can make an important contribution to adult and community health.

There was a time, well within the memory of most of us, when practically all efforts in public health were directed toward the control of infectious diseases and the establishment of proper sanitary facilities. Even when medicine became interested in the problems of workers, the major effort was still directed toward treating injuries and occupationally related conditions. Little time was left to think about health and how to keep well people healthy.

Shift in Emphasis

Gradually, through the combined efforts of both public and private agencies, serious disease epidemics have become a rarity so that more and more of our governmental and voluntary agencies' efforts are being concentrated on health promotion.

At the same time, industrial medicine, working closely with the engineers in accident prevention, has helped to make our places of work, in general, safer than our homes, highways and playgrounds. Now our major efforts are being directed toward the selective placement and health maintenance of our national workforce.

It is interesting to observe that the problems encountered in working out an effective program of

* Dr. McCahan is a former Assistant Secretary of the American Medical Association's Council on Industrial Health and is one of the country's leading authorities on the subject.

Opportunity: *Business*

adult health education and maintenance are not unlike those encountered in working out child health programs.

It was not until the school health programs were organized and the physicians were given the opportunity to work with groups of children and their parents on a continuing basis, that real strides were made in bringing preventive medicine and health education to a large segment of our young population.

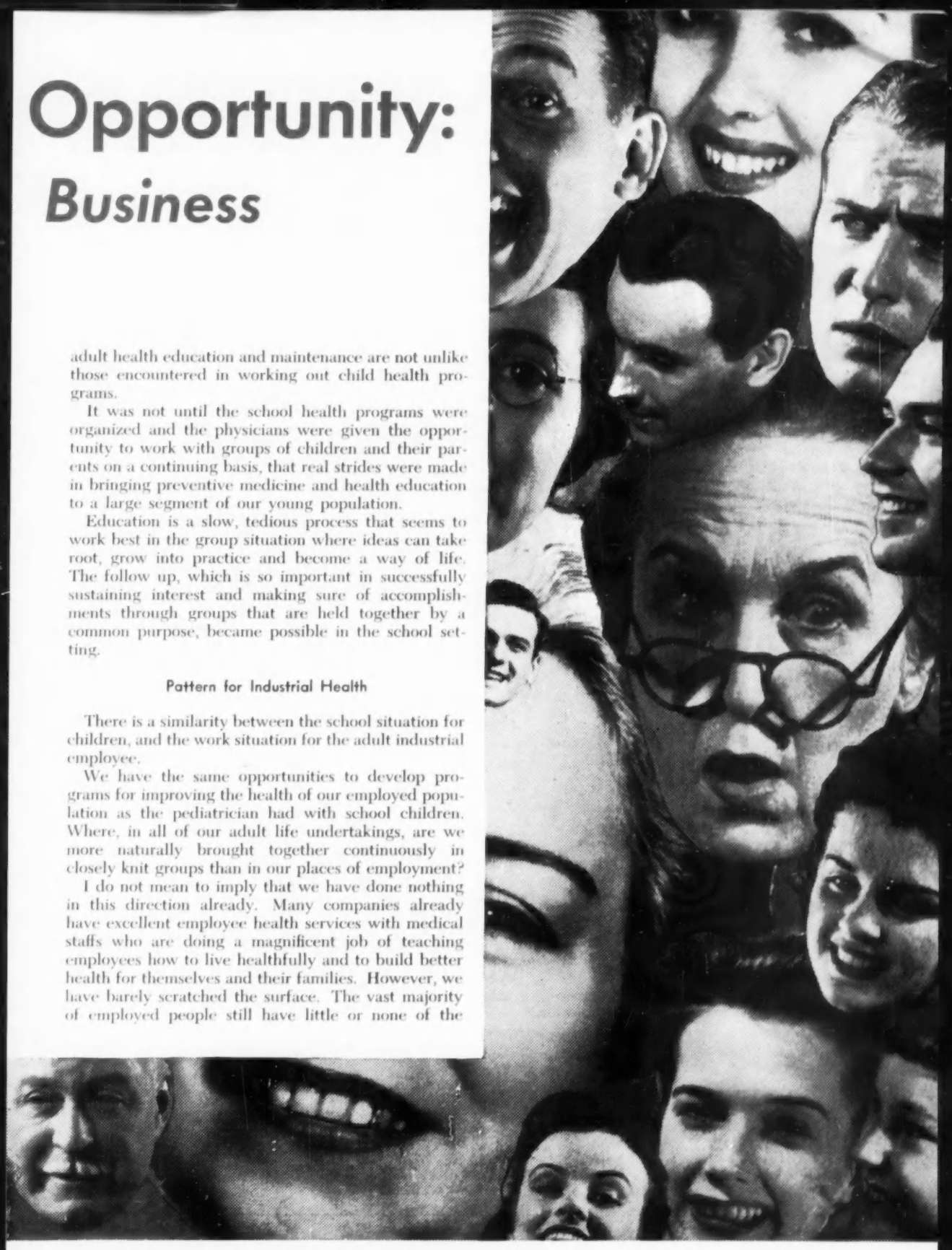
Education is a slow, tedious process that seems to work best in the group situation where ideas can take root, grow into practice and become a way of life. The follow up, which is so important in successfully sustaining interest and making sure of accomplishments through groups that are held together by a common purpose, became possible in the school setting.

Pattern for Industrial Health

There is a similarity between the school situation for children, and the work situation for the adult industrial employee.

We have the same opportunities to develop programs for improving the health of our employed population as the pediatrician had with school children. Where, in all of our adult life undertakings, are we more naturally brought together continuously in closely knit groups than in our places of employment?

I do not mean to imply that we have done nothing in this direction already. Many companies already have excellent employee health services with medical staffs who are doing a magnificent job of teaching employees how to live healthfully and to build better health for themselves and their families. However, we have barely scratched the surface. The vast majority of employed people still have little or none of the



preventive and constructive services that should be available to them.

An effective employee health service is not just something that only the large employers can afford. A good program can be designed for as few as a hundred employees, if the management is really interested and willing to put forth a reasonable effort in undertaking and supporting it. In fact, companies of almost any size can make these services available to their employees if they are willing to join with other companies in sponsoring a group plan and share the services of physicians and nurses.

Now, what is an employee health service, and how does it relate itself to promoting the health of the community? Every company is aware of the importance that proper selection, placement and maintenance of machines and materials are to the success of its business. It is also known that, if it were not for the men and women who work for it, production schedules would never be met. But it may not have given very much thought to the question of whether the employees are suited to the jobs they are trying to perform or whether the company is getting a whole or half employee for the wages it pays.

Your employee health service should be designed to help you and your employees to make the most effective use of their abilities and skills through proper selective placement and follow-up health maintenance.

Also, what the workers learn from plant health services filters back into their homes and, eventually, into the community. The employer reaps the benefits of a healthier, happier, more productive employee, backed up at home by a healthy family—a family that is inclined to tell friends and neighbors of the company's interest in them as people, which in turn attracts desirable new employees to the plant or business.

The preplacement examination at the time of hire is performed before the employee is assigned to a job. The physician can advise management of the abilities and capacities of the individual so that he can be placed in a job where he can work effectively without jeopardizing his own or his fellow workers' health or safety. Then, just as it plans the maintenance of machines, the company should arrange for periodic health examinations of employees preferably on a voluntary basis.

Those who are working in a hazardous area, or with toxic materials, or where their work involves the safety of others, such as operators of moving equipment and food handlers, should have a compulsory examination at regular intervals. The examining physician should discuss his findings with each employee and counsel him on ways he can preserve or improve his health. In some instances, the physician will discover diseases or deviations from normal that will require referral to the family physician or to the appropriate community resources for diagnosis and treatment.

The important thing is that diseases and adverse trends will be discovered early—thus affording the best opportunity to keep little things little. Findings from periodic examinations should be handled in a confidential manner so that the industrial physician becomes the health counselor of the employee and is in an excellent position to assist the family physician in following up on the continuing health maintenance of each worker.

In spite of all attempts to help people keep well, there will always be some who will become ill or injured. So, the medical staff should maintain an emergency service to which all employees can turn for emergency relief and advice on all illnesses and injuries that occur or are identified by the employee while on the job.

Tasks for Family Physician

All non-occupational illnesses and injuries should be promptly referred to the family physician if more than first aid or emergency care is required. Occupational injuries and illnesses are quite properly cared for by the industrial physician within the limitation placed upon him by the Workmen's Compensation laws and regulations that apply in particular areas.

Through the maintenance of adequate records and statistics, the industrial physician and nurse are in a position to determine whether a program is meeting employee needs. They can give positive direction for necessary changes and modifications. This data also assists the medical staff in designing a health education program specifically to meet their needs—one based on problems that are causing disabilities.

Through health counseling and health education, the physician and nurse in industry have the opportunity to make a significant day to day contribution to employee efficiency. When an employee comes to them for advice and guidance because he doesn't feel well, or he has a sick wife, or a child who is a behavior problem, or he thinks his supervisor is riding him, or because he thinks his present job is too much for him, the company is realizing some of the real benefits from the employee health service.

Helping Each Other

A good employee can be saved from becoming less than 100 percent effective on his job. In fact, he may be saved from eventually becoming an absentee or total casualty for varying periods of time.

Here is where the community health agencies can help. The physician and the nurse know which agency is best able to help. For instance, a child guidance clinic in the community may be the answer to the problem, or the local heart or cancer society may be the solution. Regardless of what the problem may be, if it is identified early and proper assistance is brought to bear, usually a valuable employee can be saved and the production schedule preserved.

There is another important way that the community health agencies can help maintain a healthy work force. Many publish excellent health literature, which they will furnish upon request, to be distributed to employees through reading racks and other means. Some are equipped to carry out health screening procedures, such as chest x-rays, diabetes detection and cancer detection programs. Others are staffed with personnel, including health educators, who are available to come into a plant and carry on health educa-

tion programs during lunch hours, at change of shifts, or at other appropriate times.

Wanted: Vision and Action

A challenging frontier of opportunity lies directly ahead of both management and medicine in meeting the health needs of our nation. We have everything that we require in this important work of establishing an effective adult health education and maintenance program—everything except a little more vision and a great deal more action.

Remember that the cost of medical care is skyrocketing and that, one way or another, management is going to foot the bill. The surest way to control medical costs is to improve the health status of our working population.

Management can make a positive contribution in this direction by establishing employee health services and by taking advantage of existing community health services—services which, incidentally, management has helped create by tax and voluntary contributions.

A company can help maintain its community and business leadership by showing its employees and their friends that it believes a healthy America is a productive America and that good health is good business.

They Silenced the Jet's Scream

(from page 43)

"And, in the jet aircraft industry, noise can reach 140 decibels!"

At such a point, sound reaches the "pain threshold," the point above which the intensity of sound is so great that it produces actual physical pain.

Mr. Grosse reported the McDonnell firm has a medical staff that now includes a director and 14 registered nurses. Through the more than 12 years that McDonnell has been building jet aircraft the company has been learning more and more about the noise problem. One result has been the establishment of pre-employment audiometer tests. Also, the company has measured the noise level of every area of the plant and employees in dangerous areas are given audiometer tests every three months.

Comfortable and Effective

In addition to the ear-muff protectors, McDonnell uses insert-type ear plugs in fabricating operations, particularly where riveting noise is objectionable. "We've used them for about 10 years," according to Mr. Grosse, "and the men find them both comfortable and effective." With an eye to the future the company is now exploring the possibility of large-scale use of the ear muffs incorporating earphones connected to a localized inter-communications system.

Pictures by courtesy of Mine Safety Appliances Co.

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(For details, use Key # C-19 on card on page 73)

KEEPING UP WITH

DERMATITIS CONTROL SERIES
other articles in Feb. and March

SKIN PROTECTIVE AEROSOL

An aerosol spray application containing silicone in a petrolatum base, Silicote Liquid Spray Skin Protective is for use against contact irritants. It is also said to promote the healing of chapped, irritated or macerated skin due to external irritants. Introduced by the Arnar-Stone Laboratories, Inc., the product's high silicone content assertedly provides prolonged protection.

The spray application can be used for contact dermatoses caused by soaps, detergents, etc.; chapped skin caused by wind, weather, acids, alkalies, etc.; sheet-burned skin and bedsores in bed-ridden patients. Available in 3 oz. containers, the aerosol spray permits ease of application, and better patient cooperation.

For details, use **Key # SP-1** on Inquiry Card on page 73.

ANTISEPTIC HAND SOAP

Pepco 415, a powdered antiseptic hand soap, has been introduced by Peck's Products Co. Actamer, used in the manufacture of the product, is said to reduce resident bacteria, thereby aiding in checking skin disorders. While gentle to the hands, it quickly cuts grease and grime. It is also free-flowing in any weather and contains skin-soothing lanolin.

The manufacturer states that the cleanser is not a dry mix compound, but is homogenized first in liquid form, then dried and pulverized ready for use. Component parts are therefore thoroughly blended.

For details, use **Key # SP-2** on Inquiry Card on page 73.

DISPOSABLE SOAP DISPENSER CONTAINER

SBS-60 cream deodorant soap is being packaged in a handy, disposable container by its manufacturer, the

Sugar Beet Products Co. The container is intended as a refill for soap dispensers and requires no mixing, or filling of containers with the product. The containers are easy to remove and replace. Soap is automatically measured out in the correct amount, eliminating wasteful usage.

SBS-60 soap, used with the dispenser containers, is a thick-bodied cream that adheres to the hand. It will not fall off and waste like liquid or powdered soaps.

For details, use **Key # SP-3** on Inquiry Card on page 73.

SKIN PROTECTION DEVELOPMENTS

POWDERED HAND SOAP

A powdered hand soap said to have good grease-cutting ability has been introduced by the Kutol Products Co., Inc. The fast-acting cleanser, known as Safe-Guard, contains lecithin, an active emollient that provides healthful skin conditioning.

According to the company, the product's efficiency, soft, pleasant feel and mild scent make it popular with users. It is available in five pound cartons or 300 pound drums.

For details, use **Key # SP-4** on Inquiry Card on page 73.

HAND SOAP WITH HEXACHLOROPHENE

Introduced by the Industrial Soap Department of Armour & Co., Formula No. 99 hexachlorophene powdered hand soap, intended for industrial use, is available with either borax or vegetable heavy-duty scrubber. The borax type box is printed in black and coral while the vegetable scrubber carton is in black or green. Both packages contain five pounds of the product, but are also available in 175 pound drums.

Formula No. 99 is claimed to destroy up to 95% of the skin bacteria that spread contact dermatitis and cause secondary infections. For those desiring a liquid product, Armour also produces hexachlorophene liquid soap U.S.P. Available in either concentrate or ready-to-use form, the product conforms to all specifications set forth in the United States Pharmacopoeia.

For details, use **Key # SP-5** on Inquiry Card on page 73.

POISON IVY TREATMENT

Bullard's Formula, a product of the E. D. Bullard Co., has been introduced for the treatment of Poison Oak, Poison Ivy and Poison Sumac. It is claimed to relieve itching, prevent spreading, check weeping lesions and to assist healing by providing a protective film that dries the irritation. Containing no harsh drugs, it is safe to use around the eyes and other sensitive areas of the body.

According to the company, if the product is applied immediately following exposure, no break out of the poisonous rash occurs. Untreated infected areas can be dried up within a few days, with no further discomfort occurring after an initial application. The product is available in handy 1⅛-oz. polyethylene tubes.

For details, use **Key # SP-6** on Inquiry Card on page 73.

PASTE CLEANER & DISPENSER

Zep-O-Kreme, a paste hand cleaner, has been developed by the Zep Mfg. Corp. It can be used either as a waterless cleaner, or rinsed off with water. Fortified with lanolin for skin conditioning, the product is recommended for repair men, mechanics, industrial workers, etc.

Two types of dispensers are available for the hand cleaner, including a portable and a wall-mounted model. The handy dispensers, requiring no water, encourage frequent wash-ups by personnel engaged in work involving grease, dirt, grime, etc.

For details, use **Key # SP-7** on Inquiry Card on page 73.

WATERLESS CLEANER DISPENSER

An efficient new dispenser is now available to accommodate a 4½ pound industrial size can of Kalene, a waterless cream-type hand cleaner and conditioner manufactured by the Kalene Corp. The dispenser has only six operating parts. The can in which the cleaner is sold also acts as the reservoir for the dispenser, and may be replaced with a new can when empty. Operating under "vacuum pressure" and employ-

ing a positive action plunger, the dispenser ejects the correct amount of cleaner required. A measuring rod inserted in the dispenser indicates the amount remaining in the container. Each refill can provides about 500 hand cleanings.

The new dispenser is easy to install. Since the cleaner requires no water or plumbing, it brings handy clean-up facilities to any location in factories, shops, offices or in the field. It can be used to remove grease, paint, tars, printers' inks and many other hard-to-remove soilages and odors without harsh solvents and grits that irritate the skin. Its lanolin and other beneficial emollients soothe and condition the skin, and it is claimed to be an effective means of combating industrial dermatitis.

For details, use **Key # SP-8** on Inquiry Card on page 73.

WATERLESS HAND CLEANER

A new waterless cream hand cleaner has been developed by the American Detergent Company, Inc. Difficult stains such as tar, iodine, marking and printing inks, dyes, mastics, grit, paint, etc., are said to be removed quickly and efficiently from the skin.

Known as Mighty Kleen, the cleaner incorporates special conditioning lubricating oils and lanolin, as well as hexachlorophene, a healant and antiseptic. It has a pH factor of 8.4 which represents the neutrality of the better body soaps and skin lotions. The cleaner is non-toxic and non-irritating, and is available in sturdy, 12 or 32 ounce-size dispensers, as well as 1 and 5 gallon spout cans, and 15, 30 and 55 gallon drums.

For details, use **Key # SP-9** on Inquiry Card on page 73.

WATERLESS SKIN CLEANER

The S & E Chemical Co. has introduced a waterless skin cleaner that can be rinsed off with water or wiped off with a cloth or paper towel. Based on Type 1 formulation, Essanee Waterless Formula will remove paint, heavy grease, tar and ink, and is non-irritating to the user's skin, according to the company.

One of the main ingredients of the mildly-scented preparation is

lanolin, which acts to restore protective skin oils. Packaging is in 16 fluid ounce cans, one gallon and five gallon cans and 64 fluid ounce dispensers.

For details, use **Key # SP-10** on Inquiry Card on page 73.

ANTISEPTIC LIQUID SOAP

To control dermatitis caused by cutting oils and other skin irritants, Huntington Laboratories has developed an antiseptic liquid hand soap called "degerm." It is claimed that the regular daily use of the soap containing hexachlorophene will destroy up to 97% of all bacteria on the skin. In addition, a protective film is formed that keeps bacteria at a low level as long as regular use is continued. The product is said to be gaining wide acceptance in all types of plants to help control dermatitis and in helping to prevent the spread of colds, flu and other contagious infections.

A concentrated liquid, "degerm" can be diluted before use with 2 or 3 parts of water. The non-toxic

soap is available in 55, 30, 5 and 1 gallon containers.

For details, use **Key # SP-11** on Inquiry Card on page 73.

PROTECTIVE SKIN CREAM & LOTION

Sanchia silicone protective cream, product of Otis Clapp & Son, Inc., is said to provide skin protection against most common irritants, chemicals, detergents, dyes, plants, etc.

Available in a greaseless vanishing cream base, with silicone and lanolin as its chief ingredients, the cream sets up a barrier against causative agents of contact dermatitis. If used daily, according to the company, an adequate prolonged protective film can be built up. The product is obtainable in ¼ oz., 1 oz., and 3 oz. tubes, and one pound jars. Sanchia lotion, packaged in a four ounce plastic bottle, is similar in action to Sanchia cream, and is also available from the company.

For details, use **Key # SP-12** on Inquiry Card on page 73.

BARRIER SKIN CREAM

A vanishing, barrier type protective skin cream has been introduced by the H. W. Stover Co. The company claims its product is a result of the utilization of modern principles in formulation and the use of G-11 hexachlorophene.

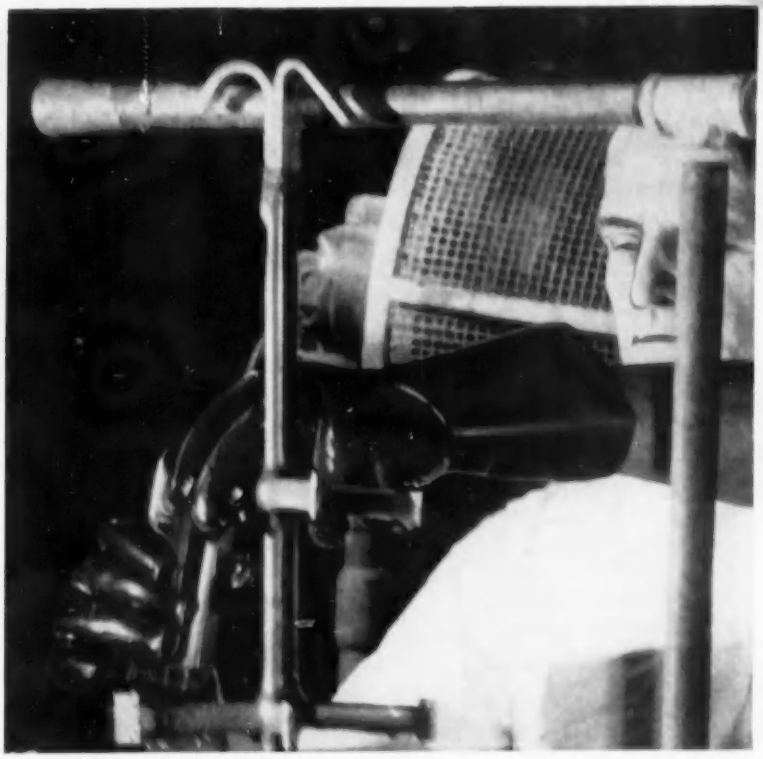
Known as Protective Skin Cream #202, it is said to be an effective safeguard against many forms of industrial dermatitis, and to have a pH factor of seven. Protecting against and aiding in the removal of adherent materials to which the skin may be exposed, it is effective against paints, lacquers, thinners, airborne dusts, grease, grime, etc. Samples of the cream are available upon request to the company.

For details, use **Key # SP-13** on Inquiry Card on page 73.

ALL PURPOSE HAND CREAM

The G. H. Packwood Mfg. Co. has made available an all-purpose hand cleanser that creams hands as it cleans them. Known as Hand Cleansing Cream, it is claimed to remove most difficult stains including hecto, mimeograph and duplicator ink stains, typewriter ribbon stains and carbon paper smudges.

The preparation's ingredients include lanolin and cold cream for



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(Use Key # C-21 on Inquiry Card on page 73)

greater skin protection. As the stains are removed, the skin is left soft and protected by the lubricating action of the hand cream. Available in individual plastic containers, tubes or in one gallon cans.

For details, use **Key # SP-14** on Inquiry Card on page 73.

DERMATITIS CREAM

A greaseless, non-irritating protective cream for the treatment of oil dermatitis, rashes, eczematoid, industrial dermatoses, fungi, etc., has been introduced by the Dermatar Co., Inc. Known as Carbothyosol Cream, it is said to combine the bacteriostatic effect of the sulfa drug with a soothing agent of the coal tar preparation. Its active ingredients include sulfathiazole, methyl salicylate, liquor carbonis detergens and menthol. The preparation, according to the manufacturer, stimulates denuded tissue and dilatory healing wounds.

To apply the cream, the affected area is first washed; the cream is then applied and massaged into the skin. In severe cases, a second layer is applied after the massage and bandaged. The treatment is repeated several times a day.

For details, use **Key # SP-15** on Inquiry Card on page 73.

POISON IVY CREAM

Zocreme, a treatment for Poison Ivy infection, has been introduced by the A. E. Halperin Co., Inc. Zirconium, an anti-pruritic for dermatitis caused by Poison Ivy, is used in the manufacture of the product. Pruritus, an uncomfortable sensation due to irritation of the peripheral sensory nerve, is said to induce itching; the new cream, therefore, relieves this itching discomfort of Poison Ivy victims.

The cream is available in either a unit of two 1-ounce tubes or six ⅛-ounce tubes per unit. The latter packaging is suggested as a one dose application.

For details, use **Key # SP-16** on Inquiry Card on page 73.

DUAL PURPOSE DISPENSER

The new PAX CP Dual Purpose Dispenser, developed after several years of research and testing, is able to dispense skin cleaners in cream, paste or powder form, according to the manufacturer, the G. H. Packwood Mfg. Co. This means that soap type preference

may be changed without necessitating a change in dispensers. The versatile unit also features an adjustable feed control to dispense the proper amount of cleaner without waste. Refilling with any soap type is said to be easy.

The large-capacity dispenser can hold one gallon of paste or cream, or five to eight pounds of powdered soap. Because of this, the dispenser will give long use without refilling.

For details, use **Key # SP-17** on Inquiry Card on page 73.

BURN KIT

The M-S-A Foille Burn Kit, for immediate treatment of all types of burns, has been introduced by Mine Safety Appliances Co. The Kit consists of four 10-ounce Foille Aerosol Sprays and Type D first aid dressings and accessories. It is contained in an all-weather case made of 20-gauge steel.

Use of the aerosol spray provides

a safe, fast technique for application of Foille antiseptic. Foille is said to control pain, mitigate shock, and help preserve tissue in burned areas. Its detergent action often eliminates the necessity of scrubbing grease-stained, dirty wounds. The Foille antiseptic can be used for all types of burns.

For details, use **Key # SP-18** on Inquiry Card on page 73.

The Foreman's Role

The foreman, as a supervisor skilled in human relations, holds the master key which will unlock greater productivity on the part of American industrial workers, according to the National Association of Manufacturers. In the new booklet entitled "Improving Human Relations," the NAM presents an action program which is designed to help top management develop better supervisor-employee relations in the plant.

Pointing out that the success of a company "rests heavily on how well the management group performs in achieving person-to-person understanding," the booklet emphasizes that the supervisor, as a member of management, must "listen" to employees and understand their needs and wants. It's most important for supervisors to listen to employees with understanding and try to interpret what they have to say, whether it is just a gripe, a more serious complaint, a suggestion, or the expression of an opinion. Thus, it says, supervisors can identify friction spots that need clearing up and can "build the team spirit so essential to lower costs and greater productivity."

The booklet points up the possibilities of getting cooperation and building good work habits through the wise use of praise and a "pat on the back" where warranted (as distinguished from flattery). It urges genuine interest in employees as individuals, apart from their function as "producers."

Sound personnel policies, enlightened leadership and effective day-to-day communication between all levels of management are the ingredients of good human relations in the plant.

The booklet presents practical steps to guide management in giving foremen and other supervisors the kind of training, education, and support they need to fulfill their vital function. Copies, at 50¢ each, are available from the NAM Employee Relations Department, 2 East 48th Street, New York 17, N. Y.

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Write for Bulletin #707

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(For details, use Key # C-22 on card on page 73)

Electrical Code

The 1956 Edition of the National Electrical Code has been published by the National Fire Protection Association, it was announced by Charles L. Smith, secretary of the Association's National Electrical Code Committee. The newest edition is revised from the previous 1953 Edition and contains all interim amendments which have been adopted since publication of the earlier edition.

Among the many new features in the 1956 Edition are: tables on current carrying capacity of aluminum conductors; grounding requirements for receptacles used for lawn tools; spacing requirements for receptacles in dwellings; safety provisions for fluorescent lamps; an article on cellular concrete floor raceways; transformer vault construction recommendations.

The National Electrical Code is designed to safeguard persons and buildings from hazards arising from the use of electricity for light, heat, power, radio, signalling and for other purposes. The Code contains basic minimum provisions considered necessary for safety. The National Electrical Code, paper bound, 7¼ x 4¾, 480 pages, is available from the NFPA Publications Department, 60 Batterymarch Street, Boston 10, Mass., at $1.00 per copy. It also appears in Volume V of the 1956 National Fire Codes published by the NFPA.

Plastic Pipe Standard

A Recommended Revision of Dimensions and Tolerances for Flexible Standard-Wall Polyethylene Pipe, Commercial Standard CS197–54, has been presented to the industry for approval, according to the Commodity Standards Division of the U. S. Department of Commerce.

The recommended revision was proposed by the Society of the Plastics Industry, Inc., and has been approved by the Standing Committee of the Industry. It differs from the current edition of the standard in that, the current edition covered only dimensional requirements, whereas the revision contains some significant specifications for quality. Two additional series of wall thicknesses are also included.

Copies of the recommended revision, entitled Flexible Polyethylene Plastic Pipe, TS-5348, may be obtained, while the supply lasts, by writing to F. W. Reynolds, Commodity Standards Division, U. S. Department of Commerce, Washington 25, D. C.

"Just testing your helmet, Bub, to be sure you're safe in it."

Lumber Yard Fires

Main causes of lumber yard fires are lightning, defective electric wiring and equipment, defective heating equipment and exposure fires. These findings are outlined in a study of fires in retail lumber yards, NFPA Fire Record Bulletin FR 56-5, published by the National Fire Protection Association.

The new report also tabulates known starting places and factors contributing to the extent of damage in 100 lumber yard fires studied.

Copies of this special report are available from the NFPA Publications Department, 60 Batterymarch Street, Boston. Price is 50 cents per copy.

Air Pollution Manual for Foundries

The American Foundrymen's Society, international technical society of the metal castings field, with headquarters at Golf & Wolf Roads, Des Plaines, Illinois, has published an Air Pollution Manual, the first engineering manual for control of air pollution from foundry operations.

Foundry Operators need technically accurate information to proceed with confidence in maintaining "good neighbor" relations in their respective communities. Rapid development of local and state air pollution ordinances in recent years has caught both foundries and enforcement officials with inadequate data on cause, effect and control of this growing prob-

lem. The new manual is intended to be helpful to officials charged with development of ordinances equitable to both communities and industry.

Written by men of the foundry field, this new Air Pollution Manual provides foundry management with up-to-date information on how to evaluate an air pollution situation, engineer its control and maintenance, and select equipment and materials on the basis of local atmospheric and related conditions.

The manual follows recent publication of the society's Ventilation and Dust Control Manual. Where the latest manual deals with external foundry plant discharge, the earlier publication covered control of environmental or interior working conditions.

Sections of the book cover: Foundry Industry's Air Pollution Problem; Review of Existing Ordinances; Community Relations; Atmospheric Sampling and Analysis; Air Cleaning Equipment; and Operating Methods, Improvements and Maintenance.

Hygiene Instruments

An unusually comprehensive and useful book on instruments and equipment for maintaining industrial health has been published by the University of Michigan, Institute of Industrial Health and School of Public Health. With the somewhat formidable title, "Encyclopedia of Instrumentation for Industrial Health," the volume is also formidable in size (1243 pages) for the very excellent reasons that the book is thorough and complete, is full of illustrations, charts and diagrams, and uses a highly readable, large-size type.

Edited by C. D. Yaffe, D. H. Byers and A. D. Hosey, the book has been prepared on the premise that measurement is at the heart of modern industrial hygiene. It is therefore concerned with instruments for measuring various factors and phenomena in seven general areas of industrial hygiene. These seven sections cover instruments: for measuring air contaminants in occupied spaces, for use in laboratories, for air pollution and meteorology, for air velocity and metering, for sound and vibration, for ionizing radiations, and for ultra violet, visible and infra red energy.

Each section includes:

1. A comprehensive review of instrumentation in that area, including problems, progress, possibilities, limitations, and needs not met by instruments now available.

2. Technical papers devoted to special problems or types of instruments.

3. Descriptions of available instruments used for determinations in this field, including name or identification of the instrument; name of the manufacturer; intended and special uses and adaptations; operating principle; physical description; performance data, such as sampling rate, range, sensitivity; interferences, limitations and safety hazards; price; operating instructions; calibration instructions; maintenance instructions; photographs, line drawings or wiring diagrams; bibliography.

Many of the instruments, in addition to their pertinent uses in industrial hygiene determinations, are also extensively employed by various research and educational organizations and in the conduct and control of industrial operations. A detailed index and 36-page appendix of tables and charts are included.

This encyclopedia brings together in one volume a monumental amount of specific information on instruments and should be useful to anyone employing instrumentation, regardless of his field of interest.

The book is a non-profit publication, produced through the combined efforts of personnel of the University of Michigan, the services of manufacturers' research directors and designers in supplying information on their instruments, authorities in the several areas of instrumentation, and a staff of experts assigned by the U. S. Public Health Service to assemble and edit the contents of the book. The reference and guide book is priced at $30 and is available from the University of Michigan Publications Distribution Service, Ann Arbor, Mich.

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(Use Key # C-25 on Inquiry Card on page 73)

1956 was one of the safest years in the history of Bristol-Myers Products Division, Hillside, New Jersey. According to a report issued by Richard C. Crosbee, chairman of the plant Safety Committee, the accident frequency rate during 1956 was reduced about 50 percent over 1955.

During 1956, there were 4.3 lost time accidents for every million man hours worked. This rate is lower than the average rate for an industry of Bristol-Myers' type, which is about 7.5.

The 1956 accident rate is also the lowest in the history of the company since the organization, in 1937, of the Safety Program which is headed by the Personnel Department and the plant Safety Committee. The 15 member committee, with representatives from every department, holds monthly meetings to report, investigate and correct existing hazards. This committee is also responsible for making plant inspections and assisting in the training of new employees.

In addition, each department holds monthly safety meetings to discuss safety in general and specific safety problems in each department.

• • •

Miller Fluid Power Division of Flick-Reedy Corporation, Melrose Park, Ill., has been awarded a safety "Oscar" for its safety record of 700,000 man hours worked without a lost-time accident. The award was presented to the firm by The Employers' Group Insurance Companies.

The firm earlier received a plaque from the National Safety Council, scoring highest in competition with 118 other companies in the council's Group E, light fabricating class.

An 11-man Plant Safety Committee headed by Wally Zelenka, Miller Safety Supervisor, was cited for its work in winning the award by Frank Flick, president of the company. He also commended all employees for their cooperation with the committee. Before the safety program was inaugurated three years ago, the firm paid the highest insurance rates. Today, because of its excellent safety record, it pays the lowest rates.

• • •

National Constructors Association has announced four safety awards to member companies. The awards, given annually to companies which establish safety records based on frequency and severity of injuries lower than the Association average, were received by Chemical Construction Corporation, New York; C. F. Braun & Co., Alhambra, Calif.; Sanderson & Porter, New York; and Koppers Co., Inc., Pittsburgh.

National Constructors Association is composed of leading engineering and building firms engaged in the engineering and construction of chemical plants, petroleum refineries, steel mills and power plants. The awards for 1956 were determined by the NCA Safety Committee and presented by C. D. Haxby, president of the Association.

• • •

Colonel Oliver J. Pickard, District Engineer for the U. S. Army Engineer District, Norfolk, Virginia, received the North Atlantic

Division Safety Award for 1956 from Colonel Clarence Renshaw, Division Engineer, for the winning record set by his District over the other five Districts during the past year. The factors taken into account in determining the winner of this highly competitive award among the 6 Districts under the North Atlantic Division, are: accident frequency, injury frequency and severity, vehicle accident frequency, and monetary loss, with primary recognition given to reduction in accident frequency.

Colonel Pickard's District was low in nearly all categories. Accident frequency was 4.00, injury 2.94 and severity 1.99, vehicle accident frequency was .33 and monetary loss amounted to $205,814; however, $200,000 of that last figure was due to unavoidable hurricane damage.

The Corps of Engineers Safety program is based on the premise that individual Inspectors and Resident Engineers are responsible for administration of the safety program. Safety Engineer for the Norfolk District is Mr. Charles R. Ballowe, and Mr. Mora A. Foreman is North Atlantic Division Safety Engineer.

• • •

The Avon Lake, Ohio experimental station of B. F. Goodrich Chemical Company, recently completed over one million man-hours worked without a lost-time injury. In actual time, this constitutes over eighteen months, according to Paul W. Ormsby, plant safety engineer.

The experimental station has recorded the best 1956 safety record of any of the eight B. F. Goodrich Chemical Company plants and will accordingly receive, for the first time, the company's highest safety award, the "President's Cup." The award goes annually to that facility establishing the best safety performance for the year. Presentation of the cup will be made by John R. Hoover, company president.

• • •

The Kalamazoo, Michigan and Pearl River, New York plants of American Cyanamid Company have been awarded the company's Safety Award of Merit. The announcement was made by S. F. Spence, director of safety and loss-prevention.

The Kalamazoo plant which manufactures fluid cracking catalysts for the petroleum industry, operated from September 1, 1954 to December 31, 1956 without a disabling injury. A total of 229,685 man-hours was amassed during that period. This is the second such award for Kalamazoo.

Cyanamid's Lederle Laboratories Division, which manufactures antibiotics and pharmaceuticals, operates the Pearl River plant. That plant operated 2 million man-hours from October 22, 1956 to January 13 1957 without a disabling injury. This is the third Award of Merit for the Pearl River plant which has twice won the Cyanamid Safety Award, requiring twice as many accident free man-hours.

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(For details, use Key # C-26 on card on page 73)

Labels for Dangerous Materials

A group of experts convened by the International Labor Organization established a basic list of dangerous substances which should be labelled uniformly throughout the world.

Five danger symbols, warning against the chief types of risks involved in handling certain substances, namely, fire, explosion, poisoning, corrosion and dangerous radiations, were drawn up by earlier ILO meetings.

The list now prepared identifies some of the more dangerous substances in common use to which one or, in some cases, two of these labels should be applied to warn of the risk involved to workers in their production, transport, handling and use.

The experts listed and classified the dangers represented by about 160 substances from acetaldehyde to zinc phosphide, including a number of newcomers produced by the modern chemical industry as well as the common pesticides.

Opinion was that the more dangerous insecticides should be marked with the international symbol indicating danger of poisoning, namely, a skull. Serious accidents have been known to occur among farm workers and their families as a result of insecticides being delivered without any indication on the container of the dangers involved.

Nicotine, hydrocarbons (other than fuels) and radioactive substances most commonly used in industry are among the substances listed.

The experts placed the primary responsibility for correct marking of packages and containers of dangerous substances on manufacturers and distributors who break down bulk cargoes.

In addition to the danger symbols established by the ILO, which are simple and striking enough to be understood by an illiterate worker (they show an exploding grenade, a flame, a skull, for danger of explosion, fire, poisoning and so forth), other warning data might also be affixed to containers, the experts pointed out.

Such basic texts should include the name of the substance (its chemical name as well as its trade name), a description of the chief risk or risks, a statement of the chief precautions to be taken, and if necessary, a statement of first-aid or other simple measures to be taken in the case of injury or emergency, they said.

The experts said that data sheets on dangerous substances, compiled by specialists and kept up to date in the light of experience and technological developments, are particularly useful to carriers, distributors and users of such substances who have neither the means nor the experience that would enable them to assess the hazards and decide upon the most appropriate precautions. They consider that the ILO should prepare, with the assistance of chemical manufacturers and other specialists, data sheets which should be drafted in simple language, but which should be scientifically accurate, and ensure their dissemination in several languages.

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Building Codes

Almost any fire chief or building official could point out in his community buildings which he would class as fire traps and which he regards as having defects both as to construction and occupancy which would tax the fire department to the utmost with serious danger to life, and which, under unfavorable conditions, might result in a spreading fire involving other buildings.

For many years the National Board of Fire Underwriters has studied these conditions and offered various recommendations for remedying unsatisfactory conditions and thus aid in reducing the enormous destruction of life and property which has taken place over the past years. The increased cost of construction and the attendant increase in taxable values emphasize the importance of reducing these fire losses. The loss in taxable values alone may have a serious impact, and failure of a burned out industry to rebuild may seriously affect a community in a number of ways.

Fire experience has clearly indicated that a large percentage of the serious losses of life and property are due to faults in building construction. The installation of dividing walls to reduce areas, the enclosure of stairways and other vertical openings from floor to floor, the firestopping of walls, and other features necessary to restrict the spread of fire, safeguard life and aid firemen in extinguishing a fire have often been omitted either because of their cost or because of ignorance on the part of the owner or builder as to the need of such safeguards. Even some so-called fireproof or fire-resistive buildings are seriously deficient in some of these important points.

Many years ago the National Board of Fire Underwriters learned that the preparation of a model building code which would protect life and property against fire, permit the use of new materials as they were developed, and provide for freedom of action in the design of buildings by architects, was a matter requiring a large amount of study and the cooperation not only of building officials but also of trade associations representing manufacturers of the materials used as well as other interested parties.

Because of the importance of such work, men of outstanding ability have been employed by the National Board of Fire Underwriters to prepare and edit a model code. Modifications and revisions have been carried on from year to year by men specializing in building construction and fire protection. The result has been a carefully edited, well arranged, concise and complete code. Since the first edition of this code in 1905 up to the present, a large percentage of the a guide and many have adopted it cities of America have used it as as a whole.

If proper codes are not adopted in municipalities of the United States, much future construction will result in buildings little better than those of the past, and a continued high rate of destruction may be expected of the assets of America as represented by buildings and their contents, as well as a continued high loss of life from fire.

Every city and town in the United States should be prepared for future building programs by having a modern up-to-date building code, with provisions for strict enforcement. Where there is need for the adoption of a new code the first step usually is to appoint a building code committee. Such a committee can well expedite its work by using the National Building Code or the National Building Code, Abbreviated Edition, recommended by the National Board of Fire Underwriters. The committee can make comparisons with the existing regulations in the city, and with codes of other cities, and see what changes, if any, are needed to make the code fit local conditions. However, experience has shown that modification of the arrangement or of the provisions of the National Building Code is seldom necessary. To aid in this work the National Board of Fire Underwriters will provide any city or town with free copies of the codes to be used as the basis of study by any committee appointed to prepare a suitable code for the community. In addition, the National Board has on its staff engineers who are available for consultation work, without cost to the community, both in reviewing any code prepared and in explaining the provisions in its National Building Code.

Inasmuch as the cost of preparing and printing a building code is high, a number of cities have adopted the National Building Code or the Abbreviated Edition by title, with such amendments as seemed necessary. A suggested ordinance for use in adopting the National Building Code, or the Abbreviated Edition, is given in an appendix of each code. Where either code is thus adopted it is the

January Losses Over $100 Million

Estimated fire losses in the United States during January amounted to $115,272,000 the National Board of Fire Underwriters has reported. This loss represents an increase of 18.9 percent over losses of $96,972,000 reported for January, 1956, and an increase of 19.5 percent over losses of $96,485,000 for last December (1956). These estimated losses include an allowance for uninsured and unreported losses.

policy of the National Board of Fire Underwriters to provide the city with up to fifty free copies of the edition that is adopted without cost, and as many additional copies of the codes as may be desired at a nominal price per copy, which is less than cost of publication. The National Board of Fire Underwriters will also be pleased to furnish any town or city which adopts either code with one to three sets of the Standards of the National Board of Fire Underwriters and to place the appropriate official of such town or city on a mailing list to receive future issues of the Standards.

Fire Safety for Industrial Ovens

A new book on "Industrial Ovens and Dryers," published by Factory Mutual Engineering Division, represents one of the important advances of recent years in industrial fire protection.

Explosions and fires in industrial ovens and dryers have long been frequent and costly occurrences, sometimes causing injury and death, almost always disrupting production, and often resulting in severe property damage.

Today we know the causes of the troubles and we know how to prevent them. Safety is now a matter of applying recommended safeguards and constantly observing recommended operating practices. This new book by the men who engineered these standards is a complete, authoritative guide to fire- and explosion-safety. It contains invaluable data for the men who design, install, buy, or operate ovens and dryers.

The 40-page volume is the culmination of thirty years of study, investigation, and testing by FM engineers working with the manufacturers of the equipment, the makers of control devices, and with operating and engineering personnel of industry itself. Copies may be obtained by remitting $1.00 to the publishers at 1151 Boston-Providence Turnpike, Norwood, Mass.

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(For details, use Key # C-29 on card on page 73)

Causes of Fires

The honeymoon is over when it comes to wasteful destruction of industrial resources and raw materials by fire.

"With the end of many raw materials in view," said John J. Ahern, professor and director of fire protection and safety engineering at Illinois Institute of Technology, Chicago, "every man must become his own safety inspector."

Addressing the Miami (Ohio) Valley Safety Conference, Ahern pointed out that with fire losses increasing each year, the day is past when waste can be shrugged off with the attitude that insurance companies are paying.

High Cost

"All of us are paying dearly for the national tragedy of indifference," he said. "All insurance rates, whether automobile, fire, or life, are made by the policyholders themselves."

But more important, Ahern said, is that the nation no longer can continue a spendthrift attitude towards supplies of lumber and iron ore. The supply is no longer unlimited, and every fire diminishes our precious metals.

He recommended two basic approaches to the problems—engineering and human.

Extinguishing Improvements

Tremendous advances have been made in recent years, he noted, in industrial fire safety systems and fighting equipment—including automatic sprinkler improvements, spray and water fog methods that make more efficient use of water, and dry chemicals, carbon dioxide, foam, and chlorinated hydrocarbons.

"With the emphasis being placed on research," Ahern said, "we can expect entirely new methods of extinguishment and new methods of using them."

But the difficult part of the problem, he pointed out, is the human element.

"Engineering can do a fine job

(Continued on page 65)

A Fire Defense in Depth

Ford Motor Company Plant at Mahwah, N. J. Protected By Extensive System Including Two Centrifugal Fire Pumps

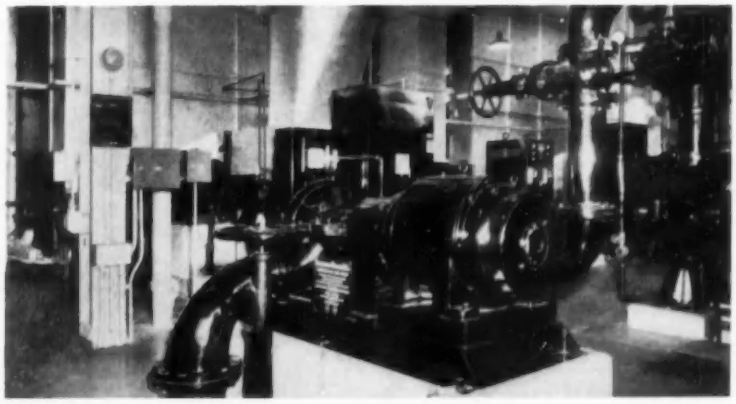
The world's largest automobile truck assembly plant, the Ford plant at Mahwah, New Jersey, has one of the most elaborate and foolproof systems yet devised to protect an industrial installation against fire.

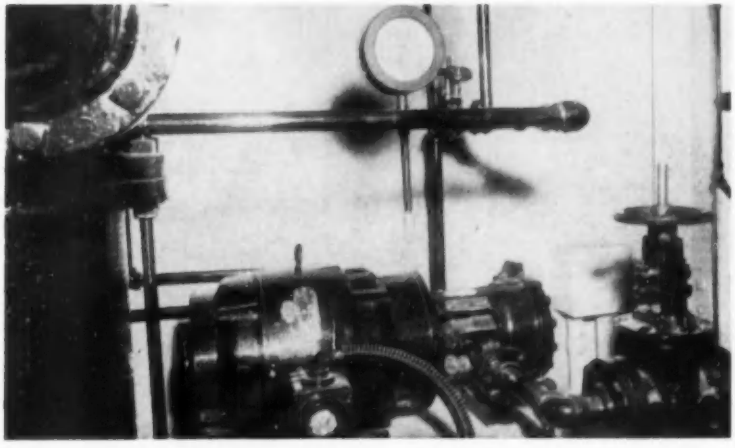
One of the newest in the Ford chain of 16 assembly plants, the giant Mahwah installation is capable of turning out more than 1,000 cars and trucks in a single two-shift working day. So intent was Ford management on providing adequate fire protection for this important plant that construction was held up until the company was assured of sufficient water for fire fighting.

The system, designed by Ford engineers in collaboration with consulting engineers R. F. Giffels and V. E. Vallet, might be described as a defense in depth with new resources ready to be thrown into battle if the line ahead is breached. Multiple sources of water afford the basic protection and at the heart of the extensive system are two fire pumps, one back-stopping the other.

Sentinel for an extensive fire fighting system. Operators keep constant vigil.

One measure of the size of the fire protection problem is the size of the plant itself. The shop and assembly area is 2,115 feet long and 792 feet wide, providing more than a million and a half square feet of manufacturing space. Here engines, bodies, frames, wheels and all other component parts are brought together and assembled on a network of conveyors which would total more than 11 miles if stretched out in a continuous line. Needless to say, some areas such as the paint spray booths present special fire hazards. In addition, there is a two-story administration building in front of and adjoining the assembly plant. This structure, housing all offices and employee facilities, adds another 17,455 sq. ft.





Water for both the fire system and the normal plant water supply comes from the wells of the Mahwah township system through a 16-in. main at 40 to 55 lbs. At a metering station on plant grounds, the main divides into a 12-in. line for the normal plant supply and an 8-in. line for the fire protection system. That, of course, is just the beginning. To provide instantly the large volume of water that might be needed to combat a major fire, Ford stores township water in two cylindrical steel ground storage tanks, each with a capacity of 250,000 gallons. Check valves on the inlet lines prevent backflow and the stored water can get out only through the fire pumps.

This impounded water and the pumps that handle it constitute the main line of defense. From each tank comes a 14-in. line to join in a 16-in. line to the boiler house where the fire pumps are

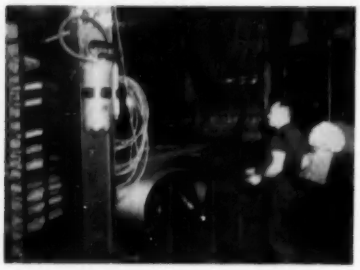
(Continued on page 64)

ABOVE—
This 6-inch centrifugal fire pump, with motor to drive it, is ready for action.

AT LEFT—
Sprinkler line pressure is kept at 125 psi steadily by this small jockey pump.

Several fires a year occur in weaving rooms, particularly in those that house wilton looms such as appear, above and below. "Fly" develops, is ignited by static in spite of careful housekeeping in plant. The company provides 20-pound chemical portables which can cut down blaze before water sprinklers go into action. This practice keeps losses low.

FIRE EQUIPMENT INVESTMENT SAVES



Self sufficing is the term which best describes The Magee Carpet Company's fire safety program. This sixty-seven year old organization several years ago took stock of its fire damage vulnerability and decided that while it was adequately protected, room was available for improvement.

Here's what the survey taken at the time revealed. Magee's plant comprises over fifty-five fire resistant major structures spread over a thirty acre tract. Some structures are four stories high and all are divided into smaller areas with fire walls and self closing fire doors. Contained in the 1,250,000 square foot plant is production machinery which looms annually more than 50,000 square yards of carpeting. While specific figures are not available, it is safe to say that value of the plant and its products (annually) amounts to figures running to eight figures. In addition to fire safety considerations for this huge investment, the management was vitally interested in providing maximum fire safety for its two thousand employees.

While of secondary concern, a third factor heightened this company's interest in fire safety. This resulted from periodic fires in weaving rooms particularly in those housing wilton looms. There "fly" accumulates and is ignited from static spark in spite of the best plant good housekeeping habits and static elimination practices.

In the past, these fires which flashed several times a year caused damage which ran from $4,000 to $12,000 each. In addition, they normally were sufficiently severe to cause water sprinklers to open. This involved a water problem not only in the area concerned but frequently on lower floors. However, elimination of "down time" was the major consideration.

Knowing what its problems of protection were, the company squarely faced the job of tightening up its general program, launching an employee education program, and re-equipping its plant with the newest and most efficient fire fighting equipment.

Magee's first line of fire safety lies in its water sprinkler protection. Except for its boiler and dye houses, all structures on the property are 100 percent water sprinklered. Water normally is drawn from city mains at over 60 psi.

Carbon dioxide portables are available in plant and office areas. This means effective control of electrical fires and, important, eliminates agent residue.

DOLLARS

Pride of the plant's safety program is its new fire truck. The converted Army vehicle has a 750 g.p.m. pump which can raise a vertical stream well above roof.

Secondary supplies are available from a 100,000 gallon aerial tank, and a 250,000 gallon suction tank serviced by one electric and one steam pump.

A part of this system are water hose racks located for complete coverage of any interior area while water hydrants dot the plant's tract. Control valves are conspicuously marked and accessible.

The company is acutely aware of the importance of first aid fire fighting equipment to its safety program. It realized that, because of the inherent combustibility of the product it manufactures, fire from any number of sources is an ever-present possibility. In addition was its experience with fires in the weave rooms.

Goal of Program

In revamping its portable extinguisher program the goal was obvious—providing equipment that would promptly quell any blaze almost the moment it flashed.

To reach the objective the company standardized on five basic extinguishing agents . . . antifreeze, water, or soda acid for fires in ordinary combustibles, carbon dioxide for flammable liquid or electrical fires where it is desirable to quell the blaze without the agent's damaging equipment, and dry chemical where the most important factor is getting the fire out fast.

Next came the job of replacing many of the extinguishers it already had with the newest and most efficient models. Then hundreds of additional portables were purchased, the majority of them dry chemical units. Today more than 1,029 portable units are available for first aid fire fighting.

From any place in the plant, one can see numerous portables available for immediate use on an incipient blaze. The locations of portables are marked by red signs at about a ten foot height. Each sign states the type of portable placed beneath it. As would be expected, all of the portables have "how to use" and "on what" labels on them in addition to a metal Magee decal and a recharge card record. Dry chemical portables were also installed in all company vehicles.

The company knew that even the best fire fighting equipment is no better than the personnel available to operate it in an emergency. In this respect Magee was fortunate that it has many volunteer firemen among its employees. To augment these experienced men, it organized fire fighting instruction courses for all its guards, foremen, and maintenance personnel. These, in turn, are responsible for training personnel under them in the use of the extinguishing equipment provided in the plant areas in which they work. Finally, fire fighting demonstrations were organized for all personnel.

It is interesting to note that since the current program has been in effect, the dry chemical portables provided in the weave rooms have quelled these loom fires immediately with little damage and before sprinkler heads opened.

Magee maintains a strict policy of "No Smoking" throughout non-office plant areas except in smoke houses. These structures are unique. They are ventilated booths about 5' x 4' with an 8' ceiling made of sheet steel with entry and exit doors and viewing windows. It is up to the shift on duty to determine for itself frequency of smokes per man and the length of time to be spent in the smoke house per visit.

Actuates Pull Box

Here's what happens when a plant fire occurs. The alarm is sounded by actuating a pull box. These are available in many conspicuous locations and cause a location-coded signal to sound throughout the plant. The com-

Fire-resistant walls separate major plant areas. Alarm boxes are handy.

pany's maintenance and police crews rush to the "in trouble" spot to man sprinkler control valves and provide other emergency services. Meanwhile plant fire fighters have already attacked the blaze with the portable equipment provided.

During emergencies the company's telephone switchboard serves as the communications center and has, in addition to its inter-plant telephone network, an audio voice call system.

The pride of the company's fire safety program is its new fire truck. Equipped at a cost of thousands of dollars, the converted Army vehicle has a 750 g.p.m. pump which can raise a vertical stream well above the highest roof of the property. In addition to a full line of larger capacity portable extinguishers it has gas masks and other emergency equipment. A well trained crew of eight man the fire engine.

No Monetary Restrictions

According to Norman W. Hoffman, Magee's Chief Engineer, the company has not permitted monetary considerations to influence its fire safety program. If the need for equipment was apparent, it was obtained.

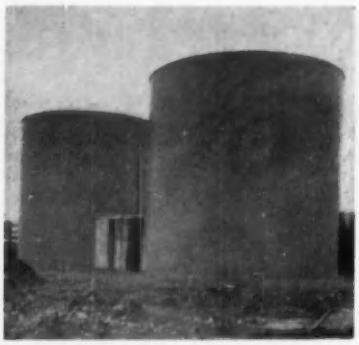
In this connection it has worked closely with its insurance underwriters, queried its own safety personnel, and asked for recommendations from fire equipment manufacturers.

Provided Best Equipment

"We feel," Mr. Hoffman states, "that we have taken every measure to make our plant as fire safe as possible and provided the best in extinguishing equipment to cope with fires which flash in spite of our preventative measures."

To date the program has paid off handsomely. The fire frequency rate is down and damage from fires which do occur is slight. Best of all, Magee has been able to finance the program and reap actual insurance dividends, the result of its low loss record!

Pictures by courtesy of Walter Kidde & Co., Inc.



Main water supply for the fire system is impounded by a pair of ground tanks.

Defense in Depth

(from page 61)

installed. The pumps chosen for this important service are two horizontal centrifugals. One is a 6-in. pump with rated capacity of 1500 gallons per minute at a discharge pressure of 125 lbs. This is driven directly by a 150-hp. induction motor at 1770 rpm. The second pump is even larger, an 8-in. unit rated at 2500 gpm. and driven through power transfer gears by a pair of 6-cylinder diesel engines. Actually there are three pumps, the third being a 1-in. centrifugal driven at 3475 rpm. by a 15-hp. motor.

The fire pumps discharge to a 12-in. line feeding a 12-in. underground fire loop that runs completely around the main plant building, a total of nearly 7,000 feet. From this loop, branch lines run to vertical 8-in. risers inside the East and West walls of the plant. There are 58 risers, each supplying more than 300 sprinkler heads—a total of more than 17,000 sprinklers protecting the manufacturing and assembly areas.

Water is maintained in all the lines at 125-lb. pressure by the little automatically-controlled jockey pump which has adequate capacity to handle normal system leakage. If fire causes some sprinklers to open, however, the attendent drop in line pressure will be beyond jockey pump capacity and will cause the 1500 gpm. motor-driven fire pump to start. If line pressure then continued to drop indicating either that the motor-driven unit has failed to start (possibly because of power failure) or that demand for water is greater than 1500 gpm., the diesel starter is activated automatically and the big 2500 gpm. pump goes into service.

Many plants would consider this a fully adequate protection system but Ford had only begun. To stamp out small fires quickly and to help combat larger blazes, the company provided 102 hose reels with individual manual control valves and supplied through 1½-in. pipes from the overhead sprinkler feeder lines. Each reel has 100 feet of hose and reels are positioned so that every spot in the building can be reached with a hose.

The minute water begins to flow anywhere in the sprinkler system day or night, Ford men will be warned and will converge on the trouble spot. An automatic system not only sounds the alarm and indicates the location of water but records this information on punched tape. The master recorder is situated in the plant security office where there is always a man on duty. A second unit is placed in the plant engineer's office and a third in the plant maintenance department.

With automatic sprinklers and instant warning, fires should be caught early and the 500,000-gallon reserve should be more than adequate, but the engineers wanted to be doubly safe. They also provided a 300,000-gal. elevated storage tank kept full by its own motor-driven pump with water from the plant supply line. If the ground storage tanks are exhausted or both motor-driven and diesel-driven fire pumps are knocked out, water from the elevated tank can be discharged into the plant fire loop providing an initial head of 125 feet. A special line extending half way up the tank permits use of half the water for normal plant use if township pressure fails, but a minimum of 150,000 gal. is always available for fire fighting and cannot be discharged except through the fire loop.

Even this is not the last line of defense. There is an emergency connection from the plant supply line to the fire loop so that, if all other sources of water and pressure are exhausted, a valve can be opened and township water at 40 to 55 lb. pressure can be utilized.

Finally, there are two fire trucks with foam and chemical equipment.

Pictures by courtesy of Fairbanks, Morse & Co.

Causes of Fires

(from page 60)

on control measures, but there is little it can do with the human weaknesses that start the fires in the first place."

Ahern recommended drastic action to cope with the problem, to instill a mental attitude that "our first fire will be our last."

Analysis of industrial fire causes, he said, points not to atomic energy, rocket fuel, or cosmic rays. Rather, nearly 80 percent of the blame goes to smoking and matches, misuse of electricity, defects in heat utilizing equipment, rubbish disposal, and spontaneous ignition.

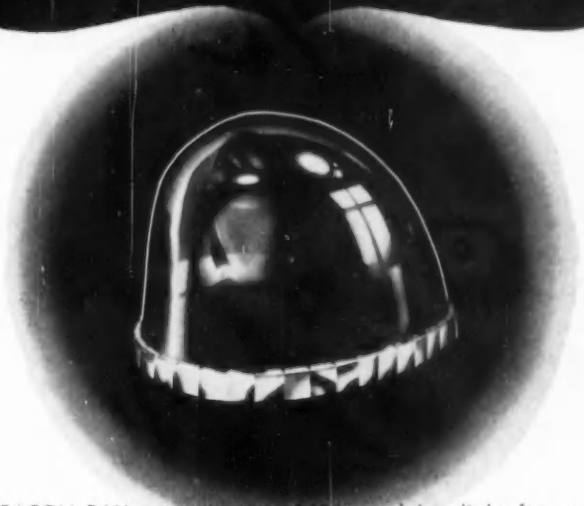
Maintenance Important

The Illinois Tech professor noted that many industrial fires are the result of corroded coils, encrusted pressure relief valves, faulty electrical controls, normal fatigue in metals, and other aging symptoms in industrial environment.

These defects, he said, will be discovered in one of two ways—either when a failure occurs accompanied by a tragedy, or on a routine test as part of a carefully planned preventive maintenance program.

"Fire prevention can be easy if we are readily determined to accomplish it. It will require constant vigilance and an innate sense of urgency to do it now."

ONE FOR THE MONEY!
here it is – the
Fire-Ball



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For further information on this outstanding light write for literature today!

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(For details, use Key # C-30 on card on page 73)

Aviation Fire Guide

Four revised aviation safety texts have just been published by the National Fire Protection Association according to Robert S. Moulton, NFPA Technical Secretary. They are: NFPA No. 407, Fueling Aircraft on the Ground ($.50); NFPA No. 408, Aircraft Hand Fire Extinguishers ($.25); NFPA No. 405T-2, Safeguarding Aircraft Fuel Tank Atmospheres ($.50); NFPA No. 403, Suggested Aircraft Rescue and Fire Fighting Equipment for Airports ($.50).

NFPA No. 407 supercedes the 1955 edition and also incorporates revised recommendations on aircraft fueling procedures and on aircraft fueling hose.

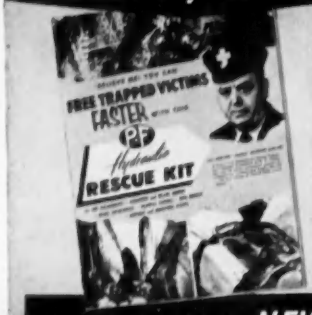
NFPA No. 408 on aircraft hand fire extinguishers has been revised to include a new paragraph on baggage and cargo compartments; also new sections on daily inspections, maintenance procedures and air crew training.

NFPA pamphlet No. 405T-2 is so designated as to indicate that its recommendations are still "tentative"—the Aviation Committee is not yet satisfied with the completeness of its recommendations on the two methods of safeguarding fuel tank atmospheres as presented.

Revisions improving the editorial content and format of standard No. 403 were adopted.

Each of these standards is now available in pamphlet form from the NFPA, 60 Batterymarch St., Boston. Standards 403, 407, and 408 has also been included in the 1956 edition of the National Fire Codes published in September.

THIS FREE BULLETIN shows you . . .



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CITY_____ STATE_____

(Use Key # C-31 on Inquiry Card on page 73)

Edited by HENRY M. GROSMAN
Counselor at Law, Newark, N. J.

MEMBER . . . . . Master Superior Court, New Jersey American Bar Ass'n, New Jersey Bar Ass'n, Chairman, Committee on Workmen's Compensation, New Jersey Bar Ass'n National Federation Insurance Counsel Past Commander, American Legion, Post 10, ... Newark, N. J.

LOSS OF VISION—Exposure to Excessive Light

A cutter, employed by a shipbuilding company, was properly awarded compensation for total disability due to loss of vision where the evidence was sufficient to sustain the finding that the repeated exposure to excessive light from the torch used in cutting was an accidental injury arising out of his employment. The employer contended that the claimant did not suffer an accidental injury arising out of his employment because there was no specific event, definite as to time and place; that there was no trauma, no force, no sudden mechanical or structural change, or unexpected breaking of the internal structure of the body. The court ruled that taking the testimony as a whole, from the expert and lay witnesses, there was substantial evidence that the claimant's cataracts were either caused by the absorption of radiant energy and infra-red rays, or that the cataracts were aggravated by such absorption so as to accelerate the onset of his disability. Affirmed.

Ingalls Shipbuilding Corp. v. King, Mississippi Supreme Court, No. 40,338, January 21, 1957.

TOE INJURY—Gangrene Resultant—Death Benefits

An employee suffering from diabetes and arteriosclerosis sustained an injury to the great toe of his right foot, which soon became gangrenous and had to be amputated. Within a short time fterwards he was readmitted to the hospital and was found to have gangrene of the left foot, and subsequently gangrene also appeared in the second toe of the right foot. The attending physician found that the original injury aggravated the pre-existing diabetes and arteriosclerosis causing the gangrene which led to his death due to a circulatory shortage.

As a result the court found there was substantial evidence to show that the award of death benefits was properly granted. Affirmed.

Delvecchio v. Thomas Crimmins Contracting Co., New York Supreme Court, Appellate Division, 3rd Judicial Department, No. 333–14, December 20, 1956.

BACK INJURY—Subsequent Aggravation

An employee's claim for compensation for a ruptured cervical disc suffered while working for an advertising company was barred by the statute of limitations. The employee subsequently instituted a claim against a shipbuilding firm, by whom he was later employed, on the grounds that his work there aggravated his previous back injury. Compensation for this aggravation was properly denied, however, when testimony showed that the employee had admitted to doctors examining him and to the plant's safety supervisor, as well as to others, that he did not feel his second employer was responsible for his condition. Under such conditions the court could not find it within the meaning of the compensation act to grant compensation when it could not be shown that the injury occurred while working for the shipbuilding company. Affirmed.

Anderson v. Ingalls Shipbuilding Corp., Mississippi Supreme Court, No. 40, 333, January 7, 1957.

INJURIES SUSTAINED IN FALL—Employer's Premises

After leaving the building where he worked, an employee of a gas corporation picked up a bundle of wood which he intended to take home for his personal use, and while walking with it to the exit gate, fell and was injured on a patch of ice. Since the employee was admittedly injured on his employer's premises and because it could not be shown that carrying the wood had anything to do with the accident, the accident was found to have arisen in the course of the worker's employment, and compensation was awarded. Affirmed.

Gabriy v. Iroquois Gas Corp., New York Supreme Court, Appellate Division, Third Judicial Department, No. 332–13, December 20, 1956.

THERE'S DANGER IN "TIME"

HAWS EYE-WASH FOUNTAINS

Time elapsing between the accident and arrival of medical aid, is too often a cause of permanent eye injury. Bridge this time gap with a HAWS Emergency Eye-Wash Fountain. Installed at convenient locations, these HAWS safety devices are instantaneously ready when such accidents occur.

The HAWS Eye-Wash Fountain washes injurious chemicals out of the eyes with clean water at controlled pressure and volume. It is also available with Drench Shower Attachment...completing an emergency station for your employees' protection.

Designed and manufactured in cooperation with leading safety engineers

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your best tools need the best protection

SURETY SURESEAL INDUSTRIAL GLOVES

PROVED more wear per pair

Even your best production equipment is useless without the healthy hands of your employees on the job. And wherever workers hands are subjected to oils, acids, solvents, chemicals and other liquids, costly injury and dermatitis always threaten. That's why Surety Sureseal gloves earn their way, by affecting production-saving, cost-saving and injury-free conditions.

Exclusive Sureseals (made from Hycar) withstand more solvents, oils, acids, etc. than any gloves we know—outwear rubber and other synthetics (we make them, too) up to 14 to 1. So, Sureseals provide maximum protection and longest service life.

TEST FOR YOURSELF AT OUR EXPENSE—Tell us on your letterhead about your requirements (specific material to which gloves are subjected) and we'll send you a pair of Sureseals for your own test.

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Safe-Hi
LADDER SHOES

Avoid ladder slipping accidents with Safe-Hi...the ladder shoe approved by U/L for *all* surfaces. Tread is of neoprene with fabric linters. Self sharpening spike for ice.

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FOR SAFETY SAKE

(Use Key # C-35 on Inquiry Card on page 73)

"VEKI" SAFETY CAP

DESIGNED FOR GREATEST INDUSTRIAL SAFETY

VEKI's larger, roomier, elastic-type snood is designed specifically for enclosing more hair than any conventional type cap . . . full protection for all hair all the time! Front of twill. Back is made of mesh—can also be had in solid or flame-proof materials. Navy blue, and brown. Adjusts to all head sizes. Descriptive literature on request.

Manufacturers and distributors of a complete line of safety clothing and equipment.

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(Use Key # C-34 on Inquiry Card on page 73)

Acoustical Materials

Sound is the result of a body in vibration setting up disturbances in the air. These disturbances are called sound waves; they spread in all directions from the source, the intensity diminishing as the sound wave expands. When a sound wave strikes a wall, or other surface, some of the sound is reflected, some is absorbed in the material, and some may set the material in vibration and thus transmit sound through to the other side, explains a recent bulletin of the National Board of Fire Underwriters.

The control of sound in buildings presents two problems: one is sound insulation or the treatment of a room or building so that exterior sounds will be kept out; the other and more common is acoustical correction or the treatment of a room so that sounds produced therein will be heard distinctly without echoes, or so that sounds produced in one part will not be disturbing to persons in other parts.

Sound insulation is best produced by heavy rigid construction or by multiple layer construction separated by shock absorbers located so as to avoid transmission of sound vibrations to the structure. Filling a hollow space in a wall with insulating material has little or no value in providing sound insulation. The National Bureau of Standards as a result of tests has concluded "that most fillers are detrimental as far as sound transmission is concerned, because they act as a tie between the two surfaces."

Acoustical correction is obtained by the application of acoustical or sound absorbing materials to the walls or ceiling of the room. The best sound absorbents are materials which have the qualities of porosity or flexibility or both. Many of the materials which have appeared to be best fitted for use as sound absorbents are readily combustible. This is particularly true of the cheaper ones, but there are noncombustible materials which can be used as effectively as any combustible material.

Some of the effective noncombustible materials are acoustical tiles and plasters composed of such materials as irregular grains of pumice bound together with portland cement or gypsum, and rock wool or glass wool bats held in place by wire mesh or perforated sheet metal.

Underwriters' Laboratories, Inc., has developed a tunnel type test for classifying acoustical and other materials as to their relative fire hazard. Classifications are expressed numerically with respect to three factors, namely, contribution of fuel to an igniting fire, rate of spread of fire, and density of smoke produced. The classification scale is based on an assumed classification for each factor of 0 for asbestos cement board and of 100 for red oak flooring boards. Classifications are published in the "Fire Protection Equipment List" of Underwriters' Laboratories, Inc., under the heading Building Materials—Hazard Classification (Fire).

Federal Specification SS-A-118, using a much smaller sample than that used by Underwriters' Laboratories, Inc., has been used to some extent, but this test may not determine whether a material is subject to progressive ignition and spread of flame under conditions typical of actual service.

In the National Building Code recommended by the National Board of Fire Underwriters there is a section restricting the use of combustible wall and ceiling finish to a degree commensurate with the life hazard in the various portions of a building and in various occupancies. The maximum flame spread rating permitted for interior finish materials used in required exit ways, upper portions of tall buildings and institutional occupancies is considerably lower than for other portions of a building and other occupancies. Flame spread rating as used in these code provisions refers to the fire hazard classification determined in accordance with ASTM Standard No. E84 which is the tunnel type test developed by Underwriters' Laboratories, Inc.

Sound absorbent linings are often used inside of air ducts of air-conditioning systems. When combustible, such linings present a severe fire hazard as has been shown by several fires. Linings inside air ducts should be fire-resistive.

inside the trade

HUBENY BROTHERS, INC., Roselle, New Jersey, manufacturers of Capitol Kitchens, and *LEEDER MANUFACTURING CO.* of Briarcliff Manor, New York, a relative newcomer in the fire extinguisher industry, have joined forces. Together they will manufacture and market a line of newly designed portable fire extinguishers of the dry chemical type, using the Leeder trade name. They will be the first in the industry to offer small 1-lb to 4-lb sizes bearing the approval of the Underwriters' Laboratories, Inc.

Anthony Hubeny, president of Hubeny Brothers, Inc., announced recently that this 39 year old company had acquired a substantial interest in the Leeder Manufacturing Company. In addition to performing all manufacturing operations, the Hubeny organization will participate actively in the management of Leeder.

Leeder Manufacturing Company was formed in 1954. Philip M. Carter, its president, has been associated for many years with the fire extinguisher industry. He was formerly a director of Pressure Lub, Inc., chairman of American Acoustic Corporation and president of Safety First Products Corporation.

THE MODERN POWER SWEEPER CO., of Azusa, California, announces the appointment of *Floor Equipment Company*, of Fort Worth, Texas, as its stocking distributor for the states of Texas and Oklahoma.

William T. Cameron

William T. Cameron announces his resignation as Director of Safety Prescription Policy and Service of American Optical Company to take over the management of a newly-formed organization to be known as the *OCCUPATIONAL VISION COUNCIL*. The services of the Council will be available to industrial concerns, professional organizations, optical companies and safety equipment manufacturers interested in industrial eye protection. Its activities will include consultation and advice on vision screening techniques, practical plans for securing industrial-professional cooperation and the distribution and use of corrective-protective glasses and goggles.

Cameron entered the safety equipment industry in 1924 and joined the staff of the U. S. Department of Labor in 1937 as head of the Safety and Health Section. Following World War II, he returned to AO to organize and direct the company's industrial vision activities.

Occupational Vision Council headquarters have been established at Harmony House, Box 185, Thompson, Connecticut.

William E. Schulz

William E. Schulz, marketing specialist, has been appointed Director of Safety Equipment Sales for *DAVIS EMERGENCY EQUIPMENT CO., INC.*, Newark, N. J., manufacturer of industrial safety equipment, with a division specializing in gas analysis and protection equipment. The announcement was made by Frank Davis, Jr., president.

Mr. Schulz was formerly vice president and general sales manager of American Mirror Works, and has also conducted his own marketing consultant service. His business background includes sales work in the field of medical and surgical equipment as Chicago District Sales Manager of Clay-Adams, Inc. He was also associated with the Kidde Manufacturing Co. for a number of years as sales manager; and he was a salesman for Bauer & Black, manufacturer of surgical dressings.

THE AMERICAN LADDER INSTITUTE has named April as National Ladder Month and has announced its 3rd Annual Ladder Display Contest. The contest is open to ladder distributors and a cash prize of $100 will be given for the best window or floor display of ladders in each of the three areas: Eastern, Mid Central, and Western. Contestants must submit a black-and-white photograph of the display and may include a written description of fifty words or less before May 15, 1957. Further details about the contest

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Clean, degrease: faster — safer — more economically.

Now FINE ORGANICS' improved SAFE-TEE SOLVENTS bring you everything you could desire in all-around cleaning and degreasing agents. Note these outstanding advantages:

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With FINE ORGANICS SAFE-TEE SOLVENTS your cleaning and degreasing work is done faster, with fewer man hours, resulting in lower maintenance costs. By reducing the time lost due to idle equipment general operating efficiency is greatly improved. SAFE-TEE Solvents are effective cleaners and degreasers for electric motors, power generators, condensers, starters, contact points, metal surfaces.

No significant residues after drying.

SAFE-TEE Solvents can be designed for your own specific requirements. Write today for "What do we mean by Safety Solvents" and complete technical characteristics of standard SAFE-TEE Solvents.

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Locks AUTOMATICALLY & instantly-holds

Prevents death and injuries from falling.

Automatic: Positive. Will catch workman if he starts to fall even if unconscious.

Inexpensive. Easy to install. No upkeep. Clamps to any rung ladders, peg ladders, pole or frame. No welding or cutting. **Simple to operate:** Requires no attention from climber.

Notched rail **hot dipped galvanized.** Entire equipment rust and corrosion proof.

Can be kept free of ice by applying heat inside carrier rail.

In use approx. 9 years. Approved by Safety Engineers and Govt. Agcys. throughout country. Patented. Manufactured only by

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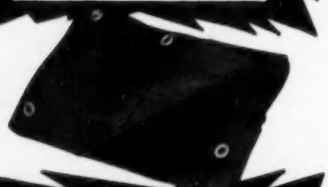

USE Reeves FIRE CHIEF TREATED WELDING CURTAINS

- close woven canvas
- weighs 10 ounces per square yard before treatment
- impregnated with Hooper's Fire Chief treatment under their patent
- Underwriters Laboratory approved

The perfect protective curtain for all your dangerous work.

A. SMITH & SON, INC.
"IF IT'S MADE OF CANVAS, WE MAKE IT"
Green & Ridge Ave. Philadelphia 23, Pa.

(Use Key # C-38 on Inquiry Card on page 73)

can be obtained from L. C. Watling, American Ladder Institute, 122 N. 7th St., St. Louis 1, Mo. The Institute, which is composed of most of the wood ladder manufacturers, also has window streamers and ladder pamphlets available for distributors.

Appointment of the *Graybar Electric Co.* as a distributor in the railway industry for the line of portable fire extinguishing equipment manufactured by *WALTER KIDDE & CO., INC.* has been announced by *Paul W. Eberhardt,* Kidde vice president.

James M. Halliday has been appointed sales representative in the Michigan, northwestern Ohio, and northcentral Indiana territory for *IRON AGE SAFETY SHOES.* His home office will be 1767 Whitmore Avenue, N.W., Grand Rapids 4, Michigan.

Before joining the Iron Age Division of H. Childs & Co., Inc., Mr. Halliday had been sales representative for Mine Safety Appliances Company in Michigan.

The Dallas branch office of the *C-O-Two Systems Division* of the *FYR-FYTER COMPANY* is now located in new quarters at 8111 Sovereign Road, Dallas 11, Texas. In this new location, C-O-Two Systems Division shares space with the Dallas branches of the Fyr-Fyter Division, the Pyrene-C-O-Two Division and the Buffalo Fire Appliance Division.

Headquarters of the C-O-Two Systems Division are located in Newark, New Jersey with other branch offices located in Atlanta, Chicago, Detroit and San Francisco.

Two new facilities have been added to its network of regional fabricating plants by the *AUTOMATIC SPRINKLER CORPORATION OF AMERICA,* Youngstown, Ohio. The company has occupied a 5000 sq. ft. building at 5810 Corothers Street, Cincinnati 27, Ohio, and early in March took over 13,000 sq. ft. of space at Route 202 and Cassatt Avenue in Berwyn, Pa., near Philadelphia.

Each of the new plants contains sales and engineering offices, warehouse stock of pipe, valves and other sprinkler components as well as pipe fabricating facilities to speed installations of sprinkler systems in the nearby industrial centers. The two new plants increase the network of such regional Automatic Sprinkler facilities in the U. S. to a total of 23.

Richard D. Printz has been named Assistant Sales Manager of *THE SELIG COMPANY,* it was announced by Mr. Simon S. Selig, Jr., President.

Mr. Printz was formerly associated with the Robert Palmer Corporation as Southern Regional Sales Manager. In his new position, he will make his headquarters in Atlanta and assist Alvin Hamburger, General Sales Manager. The Selig Company is one of the nation's largest manufacturers of sanitary and floor maintenance supplies.

Robert D. Jaffee

The *OIL-DRI CORPORATION OF AMERICA,* Chicago manufacturer of oil absorbing floor compounds and non-slip paints, has announced the appointment of *Robert D. Jaffee* as Vice-President and Controller. Mr. Jaffee joined the company after completing a tour of duty in Tokyo, Japan, with the U. S. Army as an Auditor. At Oil-Dri he will head the Finance and Production Departments.

FEMCO, INC. has appointed *Addison Davidson, Jr.* as Eastern District Sales Manager. The manufacturers of electronic communcation and control systems have employed Mr. Davidson for eight years in the capacity of sales engineer. With headquarters at Quakertown, Pa., he will conduct an expanded sales program of the company's products in the industrial areas of eastern U. S.

JERGUSON GAGE & VALVE CO., manufacturer of high-pressure, high-temperature liquid level gages, valves and engineering specialties, has moved into its new plant and general offices on Adams Street, Burlington, Mass. The new plant, 19 miles north of Boston, contains twice the floor area of the company's former plant in Somerville, Mass.

Safety Appointments

William C. Kullick, safety director for Dupont in Rochester, N. Y., has been elected president of the Genesee Valley Safety Conference, Inc. He succeeds *William J. Enders.*

Earl R. Wallace, a senior safety engineer at Eastman Kodak, is the new vice-president. *William H. Keeler,* director of the Rochester Safety Council, has been re-elected secretary-treasurer. The three officers will also serve as directors.

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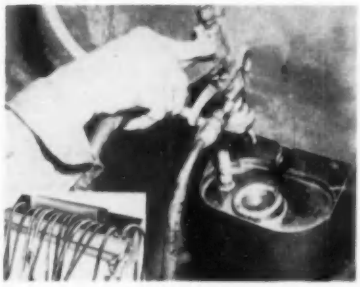
To obtain descriptive literature of products listed, use Reader's Inquiry Card. Write in code number given each item. Send written requests to: Service Dept., SAFETY MAINTENANCE.

what's new for APRIL



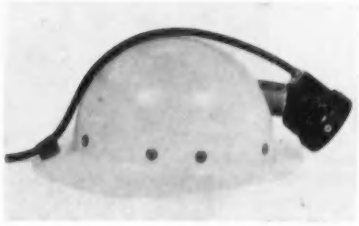
SPRAY GUN RECEIVER

(Use Key # 802 on Inquiry Card on page 73)

CLOGGING DUE to paint hardening in the nozzle of spray guns between operating periods is said to be prevented with the use of a spray gun receiver manufactured by the Protectoseal Co. Paint spray guns therefore are ready for instant use, regardless of the time lapse between operating periods; and the annoying, time-consuming necessity of daily gun cleaning is claimed to be eliminated.

The new Protectoseal Paint Spray Gun Receiver keeps the nozzle tip of the spray gun in a solvent solution when not in actual use. Only the nozzle tip is in the solution and the packing is kept away from liquid and vapor so that it is not affected in any way. The receiver is small, compact, with rounded corners, and may be located in the natural position normally used on the spray booth wall or bench. The gun is held securely in the receiver with hoses still attached, ready for use. A reservoir tank located well out of the way of the operator keeps a constant liquid level in the receiver. The perforated metal fire baffle in the gun port opening prevents ignition of the solvent in the spray gun receiver from exterior sources of ignition. Multiple gun receivers are also available. There is considerable dimensional variance in the spray guns manufactured by the leading companies and in ordering it is necessary to give the name of the maker, model number and air cap number.

Equally important in many paint spraying operations are the paint hose quick-connector receivers. Similar in principle to the spray gun receiver, these are made in various capacities to accommodate all the different color paint hose lines required at the spray booth. The receivers keep the paint hose quick-connector ends in solvent to prevent paint hardening at this critical point when not in use. The change from one paint line to another can be made quickly, and spraying continued with a minimum of delay.



HARD HAT WITH LAMP BRACKET

(Use Key # 803 on Inquiry Card on page 73)

NEW M-Series Supergard safety hats and caps with universal lamp bracket have been announced by the Boyer-Campbell Co., Safety Division, for use in mines and other places in industry where this type of equipment is required. Light, compact, sturdy, and completely insulated, Supergard Hats and Caps provide for both electric and carbide lamps; equipped with polyethylene head suspension, they can be instantly adjusted to all head sizes from 6⅝ to 8. The headband is marked in various sizes, in divisions of ⅛, insuring perfect fit. Even with winter liners, this adjustable feature is unimpaired.

The full-floating headgear is said to make its wear practical around the clock. Suspension is mildew and fungus-proof, won't mat-up with grease and oil, and is easily and quickly cleaned. When the hats are re-issued, nothing need be replaced but the sweatband.

STATION WAGON STRETCHER

(Use Key # 804 on Inquiry Card on page 73)

TO MEET the emergency of an injured worker who must be rushed to a hospital, The Bomgardner Manufacturing Co. has developed a stretcher which can be used in the back of a standard station wagon. The stretcher comes equipped with a floor type holder which can be installed in a matter of minutes to convert the rear of the station wagon into an emergency ambulance.

The stretcher itself is a 6M foam rubber latex rubber mattress which adds to the comfort of the patient while being transported on long or short trips. An easy-to-clean koroseal cover protects the foam rubber mattress at all times. The cot is standard and built entirely on the government specifications for the Armed Forces Medical Procurement Department.

FLEXIBLE PLASTIC GOGGLES

(Use Key # 805 on Inquiry Card on page 73)

NEW FLEXIBLE plastic goggles have been announced by Chicago Eye Shield Co. They are light in weight, durable and are designed to provide comfortable protection to workers exposed to dust and liquid splash.

These new CESCO #565 goggles are molded from soft vinyl material. They are contoured to fit snugly all around and can be worn over most personal glasses. Wide window lenses are curved to allow full vision. Small perforations, angled away from the eyes, are said to give adequate ventilation. They are available in two lens styles —clear or green plastic.

MOTORIZED HAND TRUCK

(Use Key # 806 on Inquiry Card on page 73)

THE E-Z LOADER, a new motorized hand truck manufactured by Walco Supply Co., is said to permit rapid loading, unloading, and shortrange transport of bulky objects weighing up to 1,000 pounds. According to the manufacturer, the truck will transport maximum loads over rough terrain, hills and deep sand, making it practical for construction jobs, oil fields, brick yards, agriculture, etc., as well as warehouse, factory, shipping and general indoor use.

The truck has three speeds forward, one for reverse and is equipped with heavy-duty transmission. Frame is welded, square tubular steel, powered by a 2-hp. gas engine, with double positive clutch and finger tip safety brake control. Both wheels are powered, for traction on uneven terrain. Oversize pneumatic tires are said to help travel through loose soil, sand, and gravel. Manual snap-lock holds load securely in place. Gross weight of 275 pounds is balanced for ease of handling. Speed range is up to 4 m.p.h.

METAL FIRES EXTINGUISHANT

(Use Key # 807 on Inquiry Card on page 73)

METAL FYR Powder, developed specifically to control magnesium and other incendiary metal fires, has been made available by the Fyr-Fyter Company. The new extinguishing agent forms no corrosive gases which might harm precision machinery, according to the company. It is claimed a highly effective means for combatting hazardous magnesium chip fires, exceptionally difficult to extinguish.

The powder may be applied with a scoop or shovel, and being non-absorbent, it will not cake when left in open containers. Underwriters' and Factory Mutual Laboratories approved, the new product may be ordered in 7-pound tubes, 40-pound pails or 350-gallon drums.

MOISTURE ABSORBENT UNIT

(Use Key # 808 on Inquiry Card on page 73)

A DEHUMIDIFYING compound for removing dampness and preventing rust, corrosion and mildew in all types of buildings has been announced by Speco, Inc. Known

as Hum-I-Dri, it is reputed to absorb up to 10 times its own weight in moisture from the air. The unit consists of a bag of activated chemicals suspended on a wire frame above a drainage drip pail. It is said to require no "baking" or drying out and to remain active until the chemicals entirely disappear. Replacement bags are available when absorbent action of the original package is dissipated.

Hum-I-Dri is recommended for use in tool rooms, steel storage sheds, warehouses where merchandise is kept in fiber containers, record files, railway cars, long distance moving vans, etc. It is also said to be suitable for use in plants where industrial steam creates unusual amounts of moisture or where drying ventilation is limited. Contractors can employ it to remove moisture from buildings during construction. The compound is offered in 2 sizes, utilizing 10-lb. and 5-lb. bags of chemicals.

FLAMMABLE LIQUIDS DRUM FAUCET

(Use Key # 809 on Inquiry Card on page 73)

AN IMPROVED corrosion-resistant faucet, Model U-008, for dispensing corrosive and flammable fluids in the chemical, food, pharmaceutical and many other industries has been made available by Economy Faucet Co. The unit has been approved by The Factory Mutual Engineering Div. of Factory Mutual Laboratories.

Metal to metal contact has been eliminated in the stainless steel valve by the use of Kel-F flurocarbon seal rings. In tests conducted by Factory Mutual Laboratories, the anti-flash screen prevented propagation of any flames entering the storage drum through the spout in the handling of flammable solvents. The self-closing faucet opens against coil spring pressure and insures positive shut off when not manually held open. A guard prevents the faucet from being jammed in the open position. The faucet can be disassembled quickly for cleaning and can be chemically and/or steam sterilized.

SOLVENT-RESISTANT GREASE

(Use Key # 810 on Inquiry Card on page 73)

THE PENNSYLVANA Refining Co. has announced a grease lubricant for pumps and other equipment used in the handling of solvents. The new grease is said to be impervious to the washing action of most petroleum and chlorinated solvents. According to the company, the grease is not affected by naphtha, kerosene, gasoline, LP gas, fuel oils, coal tar solvents, trichlorethylene, perchlorethylene and orthodichlorobenzene.

Another feature of the lubricant is that its consistency remains relatively unchanged in use. It may be readily pumped in a hand grease gun at extremely low temperatures.

DETERGENT FOR OIL TANKS

(Use Key # 811 on Inquiry Card on page 73)

A NEW chemical detergent is said to make it possible for a tanker that carried a cargo of crude oil to switch very quickly

(Continued on page 75)

FREE BULLETINS & CATALOGS

As a convenience to executives, these new publications of manufacturers are offered by the Reader Service Department of SAFETY MAINTENANCE. To obtain copies write in the key numbers on the free-postage card below.

FIRE PROTECTION

Fire Alarm & Communication System 280

Notifier Corp. Informative bulletin describes a combination municipal fire alarm and emergency telephone system. The system, utilizing audio and visual signals, both code and voice, can simultaneously transmit an infinite number of non-interfering signals. Designed for plant protection, municipal use, civil defense applications, etc.

Automatic Fire Vents 281

Wasco Products, Inc. Multi-paged booklet, complete with schematic drawings, features a line of automatic fire vents for roof installation. The self-contained units are activated by a heat-sensitive element which opens the vents when room temperature reaches a predetermined, dangerous level.

Disposable Cartridge-Activated Extinguishers 282

Badger Fire Extinguisher Co. A line of antifreeze and water filled extinguishers featuring a disposable activating cartidge is detailed in this brochure. Also shown is a conversion unit to convert any 2½ gal. soda-acid or foam to a cartridge extinguisher.

DUST & FUME CONTROL

Air Sampler 283

Mine Safety Appliances Co. Illustrated bulletin explains an air sampler designed to collect samples of aerosol contaminants for analysis. Information includes operation of the unit, available filters and calibration of the device.

Air Filter 284

American Air Filter Co., Inc. Featured in this illustrated booklet is a dry type air filter designed to use a wide range of filtering media to obtain various desired degrees of air cleaning. Engineering data, operating data and installation procedure are included.

Dust & Mist Collectors 285

Aget Mfg. Co. A line of dust and mist collectors are cataloged in this heavily-illustrated folder. Information includes dimensions and capacities for the various collectors, as well as a number of illustrations depicting typical applications.

PLANT MAINTENANCE

Floor Resurfacer 286

Stonhard Co., Inc. 6-page folder explains a floor resurfacer for repair of most types of floors and surfaces including concrete, wood, asphalt, steel and brick. The product is said to be fire-resistant, spark-resistant, non-dusting and non-breakable.

Floor Sweepers 287

Parker Industrial Floor Sweepers. Mechanical and powered floor sweepers are featured in this illustrated folder. Specifications and operating instructions are provided, as well as a graphic presentation of the advantages of mechanical and powered sweeping.

Industrial Paper Wipers 288

Brown Co. Colorful folder explains a line of industrial paper wipers suitable for light grease, oils or solvents. The disposable wipers can be used for cleaning machinery, parts, tools, as well as the hands and face.

Chemical-Resistant Paints 289

The Wilbur & Williams Co. 4-page brochure outlines a brand of products for maintenance painting problems peculiar to the chemical and related industries. Such problems include protection from fumes and chemical spillage, fungus-resistant coatings without the use of toxic additions, odor-free coatings, etc.

Sewer Pipe Root Killer 290

FX-Lab Co. A crystalline formulation to destroy roots and fungus growths in sewer pipes, septic tanks, cesspools, etc., is featured in this bulletin. Explaining how root obstructions are formed, it also relates the manner of their destruction by the product.

MATERIALS HANDLING

Fork Lifts, Stackers & Dumpers .. 291

Uhrden, Inc. Illustrated, 4-page brochure explains a line of fork lifts and materials handling equipment. Specifications and details of electric and manual lifting and stacking equipment, as well as dumping units, are given.

Rubber Dock Bumpers 292

Bumpers, Inc. Several models of a rubber bumper to protect loading docks are reviewed in this bulletin. Contains information regarding specifications, installation and application of the bumpers.

Floor Trucks 293

Nutting Truck & Caster Co. This 28-page booklet illustrates trailers, drag-line trucks, dollies, jacks and skids, casters, and other handling equipment. Included are complete specifications for many of the products.

(Continued on the next page)

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Free Bulletins (Cont'd)

PERSONAL PROTECTION

Respirators 294

Willson Products Div., Ray-O-Vac Co. Informative brochure on a wide line of respirators is fully illustrated. Includes information on interchangeable respirators which, by changing the cartridges and/or filters, will protect against many different hazards.

Industrial Gloves Cost Analysis . 295

Jomac Inc. Two related brochures dealing with glove cost reduction analysis. The first contains a form which, when completed, permits the company to recommend the proper gloves for specific jobs. The second brochure explains how analysis of glove use has cut costs in typical industries.

Anti-fogging Lens Tissues 296

Carhoff Co. 4-page folder describes chemically treated cleaning tissues that fog-proof lenses with plain water. The non-abrasive tissues may be used on glass or plastic.

Protective Clothing 297

American Optical Co. Detailed, 46-page illustrated catalog on a complete line of protective clothing, including gloves, mittens, welders' clothing, flame-resistant clothing, etc. Includes an easy-to-use hazards chart to aid in the selection of proper equipment for specific jobs.

LIGHTING

Emergency Lighting Equipment .. 298

Electric Cord Co. Informative brochure catalog: a line of automatic emergency lighting units, providing information on specifications and installation. Also explains available emergency power systems, exit lights and hand lamps.

Lighting Equipment 299

Benjamin Electric Mfg. Co. Voluminous, well-ordered catalog details a broad line of lighting equipment. The text is supported by many illustrations, including pictures, charts, tables, schematic drawings, etc.

What's YOUR Problem?

- **Has an accident or fire interrupted production?**
- **Want to know how to prevent it?**
- **Do you need background information on equipment for industrial safety, hygiene, or maintenance?**

As a service to its readers, "Safety Maintenance" will arrange to supply manufacturers literature on the following subjects. Just insert the key number on the Readers Inquiry Card on the preceding page and be sure to fill in your name and address. If you need information on a specific type of product, simply write it in on the Inquiry Card.

Key Number	Subject
	PERSONAL PROTECTION
101	Safety Goggles
102	Face Shields
103	Lens Cleaning & Anti-Fogging Equipment
104	Sweat Band
105	Hard Hats
106	Respirators & Masks
107	Protective Clothing
108	Women's Protective Clothing
109	Safety Belts
109A	Vehicle Safety Belts
110	Safety Gloves
111	Foot Protection
112	Anti-Slip Soles
113	Oil-Proof Soles
114	Welding Helmets
115	Welding Curtains
	FIRST AID AND PERSONAL HYGIENE
120	Protective Skin Cream
121	Skin Cleansers
122	Sanitary Drinking Facilities
123	Athlete's Foot Control
124	Salt Tablets
125	Noise Analysis & Control
126	Antiseptic Medication
127	Burn Medication
128	First Aid Kits & Supplies
128A	Rescue Kits
129	Stretchers & Litters
130	Throat Medication
131	Eye Wash Fountains
132	Hearing Tester
133	Disinfectant—Deodorants
	FIRE PROTECTION
141	Safety Cans
142	Drum Safety Valves
143	Safer Solvents
144	Degreasing Machines
146	Fire Blankets
148	Watchmen's Control Systems
149	Fire Resistant Hydraulic Fluids
	LIGHTING EQUIPMENT
150	Alarms & Warning Lights
152	Electrical Insulation Tester
153	Fluorescent Lamp Guards
154	Emergency Lights
	MAINTENANCE
160	Anti-Slip Floor & Mats
161	Anti-Slip Waxes & Finishes
162	Floor Cleaning Compounds
163	Cleaning Machines
164	Oil & Grease Absorbents
165	Paints
166	Floor Resurfacing Materials
	LADDERS & HANDLING
170	Ladders
171	Ladder Safety Devices
172	Scaffolds
173	Work Platforms
174	Slings
175	Safety Hooks
176	Fork Truck Steering Aid
176A	Fork Truck Fume Muffler
177	Acid Pumps
	GUARDS
178	Machine Guards
179	Power Press Feeders
180	Safety Tools
180A	Valve Operators
	EDUCATIONAL AIDS
181	Safety Signs
182	Safety Awards & Emblems
183	Employee Safety Guide
184	Aisle Marking Equipment
185	Bulletin Boards

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WHAT'S YOUR PROBLEM?

and inexpensively to a cargo of edible oil or even grain for its return trip. Planisol, a granular detergent is marketed by Dunham Chemical Company, a subsidiary of National Cylinder Gas Company.

Instead of simply carrying water as ballast on a return trip, a tanker will be able to carry a cargo of chemicals, or other materials, almost immediately after delivering a load of crude oil, the company states. In order to carry double payloads on such "turn-around" trips, a ship's tanks should be cleansed by a hot-water solution of the new chemical applied by hose equipped with a spinning nozzle. The solution can be recirculated through one tank after another. According to the company, no scrubbing of the tanks is required, and the result is a tank so clean that the U. S. Department of Agriculture has approved this detergent's use in meat-packing plants. The new method is claimed to reduce costs of tank cleaning as much as 60 per cent.

POCKET-SIZED RESUSCITATOR

(Use Key # 812 on Inquiry Card on page 73)

CONTINENTAL Hospital Industries, Inc., has introduced a small, compact oxygen inhalator and resuscitator weighing only one pound which utilizes small cylinders of oxygen. Two of these, released by a twist of the wrist, make six liters of pure oxygen available in the rebreathing bag in seconds. Additional cylinders may be released while the unit is in use.

Known as the Western Reserve, the unit is claimed to provide protection wherever fumes or toxic atmospheres exist. It can be used as a mask for fire and rescue equipment, for both the rescuer and victim, as well as a resuscitator in plant emergencies. Its light weight makes it highly portable, and immediately available, according to the company. The unit can be self-administered and features an automatic safety valve release to protect against too great a pressure being administered to a victim.

LENS CLEANER CABINET

(Use Key # 813 on Inquiry Card on page 73)

INCREASED capacity and reduced maintenance are important features of the K-LENS-M Skyscraper, a new lens cleaning cabinet introduced by The Wilkins Co., Inc. It is said to have a capacity of 1400 lintless cleaning tissues and a compartment for a 16-ounce spray bottle of K-LENS-M Liquid Lens Cleaner. Convenience and assurance of an adequate supply encourages wearing of eye safety equipment with corresponding decrease in eye accidents, according to the company.

The cabinet has two sections. One section contains a simple-to-operate finger tip-controlled spray bottle of lens cleaner, effective for both glass and plastic goggles. The free-spraying mechanism makes possible clean and economical application of fluid—with no waste. The main compartment contains lens tissues, 4½" x 9" in size, is tamper proof and allows only one tissue to be dispensed at a time. All steel in construction, the unit can be mounted in a space only 4⅞" wide and 28" high on any wall surface or on steel I-Beam supports.

AEROSOL DEGREASER

(Use Key # 814 on Inquiry Card on page 73)

GREASE, oil, carbon, tar, gums and similar difficult-to-remove substances can now be quickly and safely removed, it is claimed, by a new aerosol degreaser designed for use on all types of machinery and electrical equipment. Introduced by the Stewart-Hall Chemical Corp., the product is known as Zipp. Sprayed on an area to be cleaned, the area can be wiped clean with a rag within minutes, or, if not electrical, held under a water faucet and rinsed off.

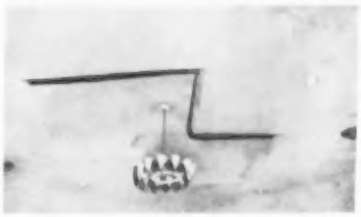
The spray is intended for cleaning motors and other electrical equipment, oily

machinery, and various mobile equipment. It will remove greasy stains from painted surfaces, and concrete floors. Zipp dries rapidly, leaving no film or vapor. It will not short electrical equipment, is non-corrosive and non-flammable, and is safe for painted surfaces. It does not contain carbon tetrachloride. Packing is 16 ounces net weight per can.

FIRE RETARDENT ACOUSTICAL FINISH

(Use Key # 815 on Inquiry Card on page 73)

A NEW, mechanically applied interior finish material has been announced by Columbia Acoustics & Fireproofing Co.,



subsidiary of U. S. Mineral Wool Co. Known as Cafco Spray Type I, the new material is an abrasion-resistant monolithic wall and ceiling finish that is said to combine several desirable features in one application: High sound absorption; effective thermal insulation; fire retardency (tested by Underwriters' Laboratories); and efficient condensation control.

The spray is applied by factory-trained men to assure exact compliance with specifications for texture, degree of hardness, thickness, and efficiency. It is applied directly to any clean, rigid surface such as metal, transite, plaster, wood, wire lath, concrete or cinder blocks. The material may be spray-painted any desired color.

SELF-POWERED SIGNAL HORNS

(Use Key # 816 on Inquiry Card on page 73)

TWO NEW portable, self-powered signal devices which can be heard more than a mile away have been listed by the Federal Civil Defense Administration as approvable for purchase under the agency's "matching funds" program as auxiliary attack warning equipment. Civil Defense officials said the S-11 and BB-44 horns, manufactured by the Falcon Alarm Co., Inc., are designed to augment standard air defense warning equipment. The shrill-toned horns should help to avoid confusion in buildings where fire alarm bells have previously been utilized as air attack signals.

The units consist of specially-engineered aluminum horns and valve assemblies and disposable one-pound cans of harmless Freon Gas. The S-11 horn is three inches long and will produce more than 300 two-second blasts of 120-decibel intensity from a single can of Freon. The eight-inch-long BB-44 produces approximately 200 two-second signals of 125 decibels. Replacement cans of "Packaged Power" Freon are available from the company.

PORTABLE SAFETY ISLAND

(Use Key # 817 on Inquiry Card on page 73)

FORMING a safety island in a matter of minutes wherever desired, this portable unit introduced by Bil-Jax, Inc., has many uses in street, sewer, electrical and other types of work. It can be erected around open manholes, sewers, cellars, etc., offering protection to workers and pedestrians alike.

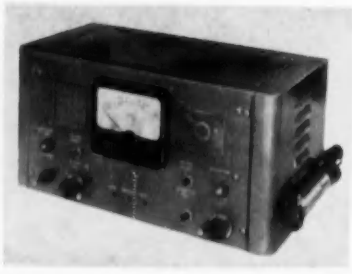
The unit is completely adjustable, both in length and width, from 36 to 60 inches in either dimension. It can be set up or dismantled in a few minutes, and when knocked down makes a very compact bundle. It is made entirely of light-weight tubular steel, electrically welded.

AREA RADIOACTIVITY MONITOR

(Use Key # 818 on Inquiry Card on page 73)

A NEW combination area-personnel-equipment monitor for detecting changes in the radioactivity level of an area has been introduced by Nuclear Measurements Corp. Known as the Nucliguard, the unit incorporates a newly-developed 3-cycle logarithmic count rate meter. It is available with either a beta-gamma sensitive GM probe, or with a gamma sensitive scintillation probe. Any desired warning level of radioactivity may be preset in the instrument. When this level is exceeded, a visual and audible alarm operates to warn personnel in the area.

The monitor plugs into any 110 V. outlet. It measures 8" high x 9" deep x 18" wide. Weight is approximately 15 pounds. The probe has a 6 foot reach when fully extended. Equipment includes a built-in precalibrated radioactive test sample, and a 3,600 cycle per minute test signal. Instrument sensitivity is 50 to 50,000 counts per minute.



UNIVERSAL BRIDGE SIZE EYEWEAR

(Use Key # 819 on Inquiry Card on page 73)

DUGGAN SAFETY Products Co. has introduced a line of safety eyewear designed to fit more than 95 percent of all employees' bridge sizes. Temple length, also adjustable, requires no heating but can be manipulated by hand. The company claims that only three sizes of glasses need be stocked (small, medium and large).

The frames are made from sheet stock, providing extra strength and durability. They are of the modern, prescription-type eyeglass design, and are available in metallic blue and pink crystal colors. Lenses include clear and green heat treated optical lenses and plastic lenses.

SELLSTROM "700 SERIES" SAFETY GLASSES

SQUARED SHAPE PLASTIC EYEWEAR

(Use Key # 820 on Inquiry Card on page 73)

FOLLOWING up its recently introduced metal frame safety glasses in the "Squared Shape" design, Sellstrom Manufacturing Co. has announced companion plastic frame models. The 700 Series is said to provide the same pleasing appearance as personal glasses, with greater viewing area than found in previous styles.

The plastic used for the frame is acetate butyrate, giving it flexibility as well as the strength to withstand the heavier impact of direct blows; yet the frame can be bent or twisted without serious damage. Nose pads, too, are stated to be extra large, assuring more wearing comfort and minimum nose "gouging." A complete selection of frames, in flesh, bronze and green shades is available including side shield models.

SCRUBBER-VACUUM MACHINES

(Use Key # 821 on Inquiry Card on page 73)

FINNELL SYSTEM, Inc., has announced that its self-powered combination scrubber-vacuum machines, both gasoline or propane operated, are available in 18, 30, and 36-inch brush spreads. Known as Scrubber-Vac, these machines automatically apply the cleaner, scrub and pick-up, all in one operation. The 30 and 36-inch sizes also flush-rinse, if required.

A clutch lever adjusts speed to the desired rate (up to 150 fpm for the 18-inch size and 136 fpm for the 30 and 36-inch sizes). One engine operates all working

parts. The units perform quietly, according to the company. A monoxide eliminator, powder dispenser, and rinse assembly are accessories. The company also makes a full line of electrically operated combination machines.

AUTOMATIC URINAL FLUSHING EQUIPMENT

(Use Key # 822 on Inquiry Card on page 73)

AUTOMATIC urinal flushing equipment has been introduced by the Speakman Co. Use of the equipment is said to reduce unpleasant odors, conserve water (by flushing only after toilet use), and to insure maximum sanitation by automatically flushing urinals three to five minutes after use.

The equipment is activated by a switch installed in the door jam of the toilet room. When the door is opened, the flushing cycle is begun. The cycle is not repeated until the door to the room is again opened. The equipment, which can be installed on most existing urinals, is recommended where positive flushing action is required.

INDUSTRIAL POWER SWEEPER

(Use Key # 823 on Inquiry Card on page 73)

THE SWEEPMASTER, an industrial power sweeper, available from the Wilshire Power Sweeper Co., features a 15 H.P. gasoline engine, multiple disc reversing clutch, and a three speed transmission. A dust collecting system known as "Dustomatic" incorporates the use of a high volume fan which deposits all dust into a heavy duty bag that can be cleaned without removal from the machine. According to the company, the unit can sweep 126,000 sq. ft. per hr. at six m.p.h. in open area. It is equipped to sweep to ten m.p.h.

Fingertip dual switches mounted on the steering column actuate both the hydraulic

dump on the hopper and the seven inch lift of sweeping chamber enabling the machine to sweep bulky debris. A side brush allows the operator to sweep close to walls and machinery, and under floor piping, benches, etc.

NEW OIL-GAS FILLER CANS

(Use Key # 824 on Inquiry Card on page 73)

A LINE of completely redesigned galvanized oil and gasoline filler cans ideal for mill, factory, and general industrial use has been introduced by Eagle Manufacturing Co. The cans feature a seamless-drawn dome-shape shell with double-seamed bottom, and no top or side seams. The dome-shape shell prevents water and dirt from settling on top. Heavy high-grade 26-gauge galvanized steel used in the cans provides for rough usage and unlimited service.

The new line of cans is available in 1, 2, 2½ and 5-gallon sizes. The company recommends the new-style oil and gasoline cans for filling stoves, heaters, in construction work, and general plant and railroad maintenance.

ACID-RESISTANT WATERPROOF SUIT

(Use Key # 825 on Inquiry Card on page 73)

ANSWERING the need for comfortable construction worker's clothing, Standard Oiled Clothing Co. has introduced a new waterproof neoprene heavy duty suit. It is specially designed to resist abrasion, snags and tears, while keeping the user warm and dry.

Shown here, a dynamite drilling crew is claimed to be unaffected by the damp chill working conditions in the new suits. Resistant to oils, grease, tars and most acids, the suits are intended for mine workers, outdoor maintenance crews, acid workers, in short, all workers exposed to damp, wet conditions. The suits, which can be changed in styling, are suitable for almost any industry which requires heavy duty clothing.

READY-MIXED ASPHALT PAVING

(Use Key # 826 on Inquiry Card on page 73)

INSTANT-PAVE, a new asphalt blacktop requiring no mixing, has been developed by the Sicilian Asphalt Paving Co. The cold pave is said to be resistant to heat and cold and practical for both indoor and outdoor use.

The asphalt blacktop is packaged ready for immediate application. To use, the mixture is raked over an area to be covered, then tamped down with a roller, shovel, or other means. According to the company, the newly-paved surface may be used within 24 hours, if not immediately where traffic is light. The paving is recommended for repairs on driveways, drop curbs, pathways, etc. It is available in 50 and 100-lb. bags.

PLATING TANK BALLS

(Use Key # 827 on Inquiry Card on page 73)

CORROSIVE and noxious acid fumes from metal plating tanks are said to be smothered under a blanket of hollow spheres molded of Bakelite polyethylene that resists almost indefinitely the acid solutions the spheres float on. Ordinarily, gas bubbles rise to the surface of metal plating solutions and burst, throwing a fine, corrosive mist into the air.

Cosom Industries, Inc., designed these hollow spheres, known as Go-Mist Plating Tank Balls, which form an evenly spread blanket over the surface of the tank. Polyethylene was selected for these spheres because of its inertness to strong acids and other chemicals. The spheres are about one and one-half inches in diameter, in order not to lodge in recesses of the work spaces. Their small size also leaves little space between them when tightly packed. The spheres roll over one another when forced together and thus prevent rafting together to expose portions of the solution. A dense and even blanket, to control the escape of acid fumes and minimize splashing, requires about 55 of the spheres per square foot. While the spheres are used mainly to control acid fumes, they also help maintain a more uniform temperature in the plating bath.

BRAKED STEP LADDER

(Use Key # 828 on Inquiry Card on page 73)

A NEW easy-to-lock line of ladders from 8 to 12 steps, that roll easily to any location for reaching high places safely has been developed by Tri-Metal Ladder Co. Its locking feature raises casters and lowers the front legs of the ladders, braking them securely to the floor to prevent tilting, swaying and slipping. The lock is easily engaged at the front of the ladder by foot pressure and will withstand years of hard use since there are no springs to wear out.

½" thirteen gauge or ¾" twelve gauge expanded metal steps assure a firm footing for personnel and a protective railing at the sides and top of the ladder provides even greater security. The Safety-Step Ladder is available in gray, yellow, green or aluminum color.

SPRAY-ON BANDAGE

(Use Key # 829 on Inquiry Card on page 73)

SPRAY-BAND, a liquid, spray-on bandage which dries quickly to a transparent, flexible, protective film, has been marketed by Schueler & Co., Medical Products Division. Containing the antibiotic Tyrothricin, it is packaged in push-button aerosol containers. The product is intended to protect joints, neck and other hard-to-bandage areas, and helps heal minor burns, cuts, abrasions, lacerations, blisters. It can be used for athlete's foot, and other fungus infections.

The spray bandage is easy to apply and provides a high degree of sterility. It helps prevent the spread of infections and discourages anerobic growth, according to the company. It is non-allergenic, non-sensitizing, non-toxic and non-flammable. Available in a small size, as well as a large, 6 oz. container.

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CESCO...RIGHT—BEFORE YOUR EYES!

New CESCO plastic frame safety glasses WITH ULTRA-MODERN LENS STYLE

New CESCO plastic frame safety glasses are available in 3 sizes:
No. 375 • 44x37mm.
No. 376 • 46x39mm.
No. 377 • 48x41mm.

Comfort Bridge safety glasses

Sideshield Comfort Bridge safety glasses

• These new CESCO plastic frame safety glasses with the F7 shape lenses are not only superior in the safety glass field from the standpoint of fit and comfort, but many users prefer their shape and style to that of most personal glasses.

In addition to their fine appearance, these safety glasses have many outstanding features. Among them are:

LITE-KLIP safety glasses

Frames are rigid and will retain original shape without bowing

Choice of 2 colors—opaque slate (bluish gray) to eliminate light reflection, or translucent flesh

Nosepads are broad bearing to give comfortable distribution of weight

Lenses are interchangeable—the same lens fits either right or left side

Available in three sizes

Flexible plastic goggles

CHICAGO EYE SHIELD COMPANY • **2310 Warren Boulevard, Chicago 12, Illinois**

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***ASK** your CESCO Safety Equipment Distributor to show you the new modern plastic frame safety glasses with the F7 lens—and the many other safety glasses and goggles in the complete CESCO line*

CESCO CESCO **FOR SAFETY**

(For details, use Key # C-40 on card on page 73)

Thantis® LOZENGES

first aid for throat irritations

SORE THROATS due to coughs and colds, if neglected, may result in lost man hours of work.

THANTIS® Lozenges contain no antibiotic; they produce no unpleasant by-reactions in the mouth.

THANTIS Lozenges relieve pain promptly—reduce infection—act prophylactically.

Twenty-seven years' extensive clinical and lay use has proved the safety and effectiveness of this popular product.

(For details, use Key # C-41 on card on page 73)

HYNSON, WESTCOTT & DUNNING, INC.

BALTIMORE 1, MARYLAND

Mercurochrome®

First aid for wounds . . . . . .

Neglect may cause infection which can be prevented by prompt use of 'Mercurochrome.'® No antiseptic has been proved to be more effective than 'Mercurochrome' for topical application.